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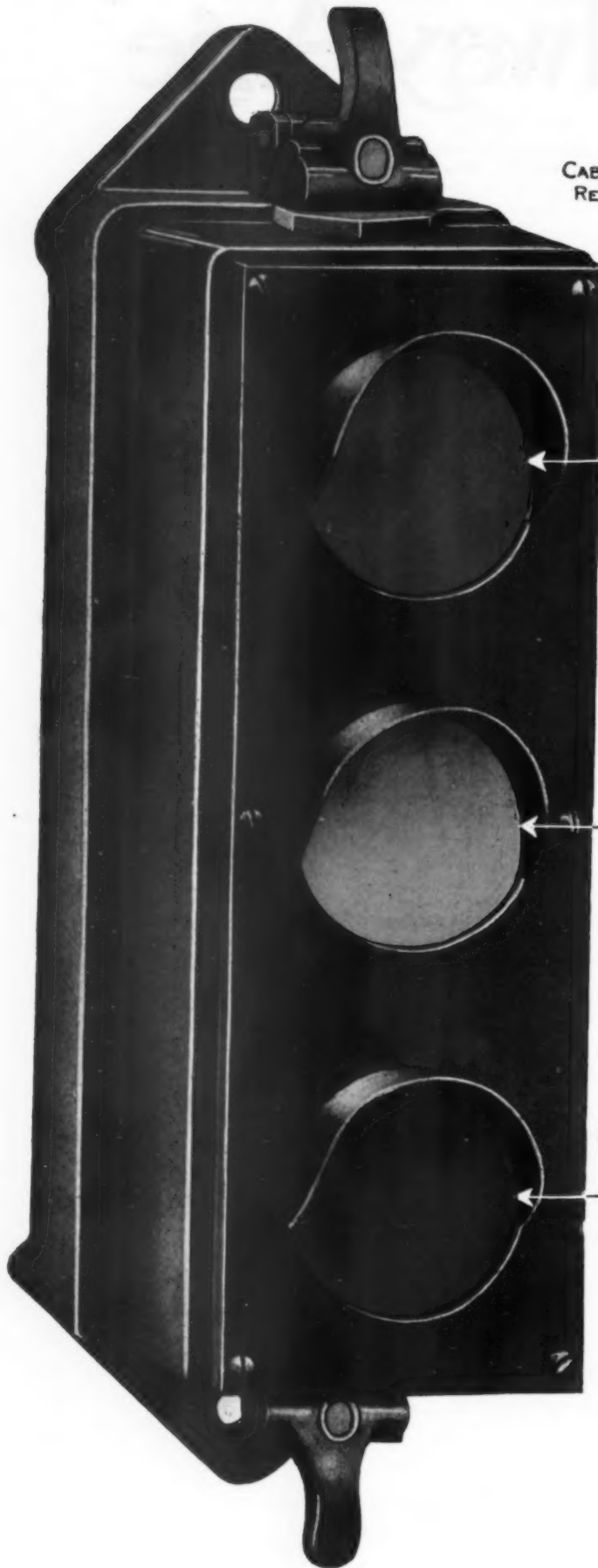
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Instantly Displays Conditions of the



CAB SIGNAL
REMAINS CLEAR



WAYSIDE SIGNAL CHANGES
FROM CLEAR TO STOP WHEN
TRAIN ENTERS BLOCK



CLEAR

CAB SIGNAL
REMAINS CAUTION



WAYSIDE
FROM CAU
WHEN TRA



No matter where the train is in the block, no matter how far past the last signal or how far to the next . . . when the conditions ahead change, instantly the cab signal changes.

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District Offices

NEW YORK

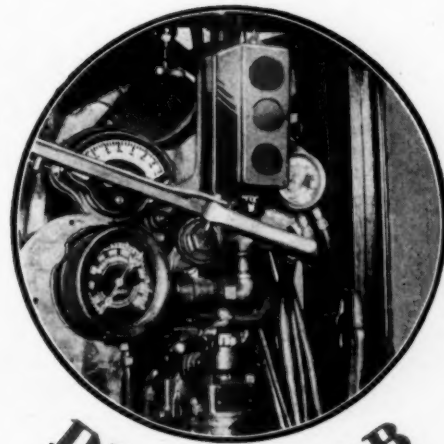
MONTREAL

CHICAGO

ST. LOUIS

SAN FRANCISCO

ly y Changed the Track Ahead



IN THE CAB

WAYSIDE SIGNAL CHANGES
FROM CAUTION TO STOP
WHEN TRAIN ENTERS BLOCK

CAUTION

TRAIN IN BLOCK
CAB SIGNAL AT DANGER

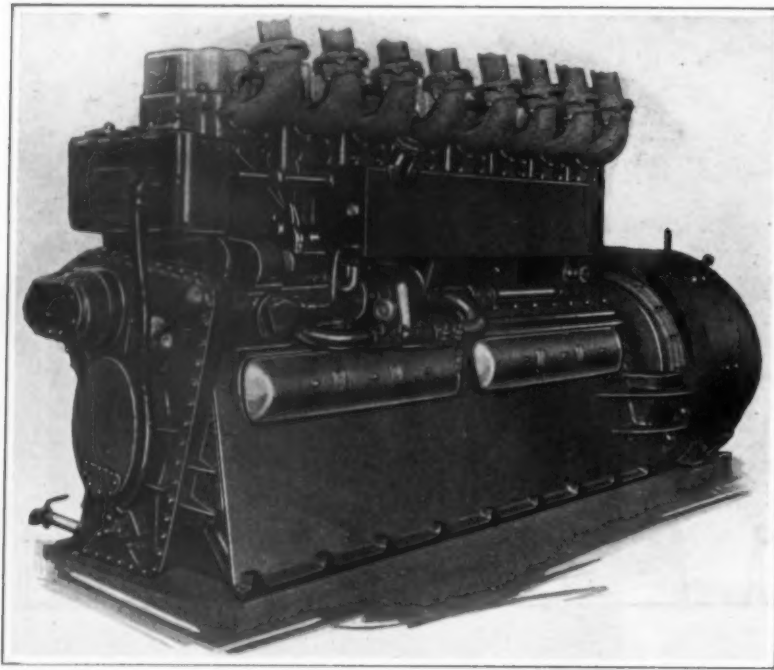


STOP

"Union" Continuous Cab Signals are of great operating advantage. For by their instant indication of all changes in track conditions ahead, track capacity and speed and safety are increased.

1881  Union Switch & Signal Co.  1930

SWISSVALE, PA.



Model 860

The Brill "EIGHT" is
the most powerful
single power plant
Gas-electric Car ever
developed

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A dray horse is intended for heavy service. So are these most recent developments in gas-electric cars. The increasing demand for equipment of these capacities is evidence of their broad field of application.



Step by Step

From the Model 55 to Model 860

BRILL GAS-ELECTRIC CARS

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Railway Age

Vol. 88, No. 17

April 26, 1930

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Do We Want More Government Regulation?

WITH the taking of the testimony of the respondents, the hearings before the Federal Trade Commission on complaints against certain officers of Swift & Company and the Mechanical Manufacturing Company for the alleged use of unfair methods of competition were concluded last week. The *Railway Age* has tried to report concisely, but accurately and completely, the testimony introduced in order to give its readers a true picture of what actually is or may be involved in so-called "reciprocal buying".

The testimony has exhibited "reciprocal buying" in apparently its worst form. This has had the advantage of showing how bad the results of the practice can become if it is given unrestricted sway. The Mechanical Manufacturing Company placed upon the market a new draft gear in competition with similar devices which had been marketed by other manufacturers for years, and which had been subjected to the severest laboratory and service tests. Both the testimony of railway mechanical officers who were called as witnesses by the government, and the fact that apparently this new draft gear has now been taken off the market, throw light on its merits. The testimony indicated that the price asked for it was higher than the prices asked for other devices intended to perform the same service. The device was not made by Swift & Company, but by a separate company which was controlled by officers of Swift & Company. Nevertheless, in a comparatively short time a large number of sets of it were sold to numerous railways. The respondents have categorically denied that threats or promises regarding the routing of Swift & Company's traffic were used to promote its sale. In view of all the circumstances, and the abundant testimony regarding the activities in its behalf of traffic officers of Swift & Company, the conclusion that the most effective argument used to sell the device actually was Swift & Company's traffic is unavoidable.

Traffic the Paramount Consideration

We seem to have, then, in the testimony in this case, a complete answer to most of what has been said in defense of the practice of so-called "reciprocal buying" in

the railway field. There was absolutely no reciprocity between traffic and purchases in this case, because the traffic involved was that of one company while the device sold was that of an entirely different company which was not controlled by the former company, but by a few of its officers. The evidence indicates that quality and price were not the major considerations, and traffic something that was considered only after quality and price had been determined to be satisfactory, but that traffic usually was given paramount weight by both sellers and buyers. The effects which, in the long run, would be produced upon railway efficiency and economy, and upon progress in the railway equipment and supply manufacturing industry, if traffic should be given such paramount weight in all railway purchasing as it was in this case, are too plainly self-evident to require elaboration.

The question presented in a case in which it was shown that the traffic of a big shipper was used to promote the sale of a device which could bear comparison in point of price and proved merit with competing devices would be a somewhat different one. In such a case, however, there would still remain to be determined the question as to whether it is sound business practice for the traffic of a big shipper to be used in competition with manufacturers who do not, directly or indirectly, control a large amount of traffic. It is recognized as unsound business practice, and is unlawful, for the traffic of a big shipper to be used to secure from a railway rebates, or lower rates or better service than are given to other shippers. Is it not, then, unsound business practice for the traffic of a big shipper to be used to influence the results of competition between those who are trying to sell their products to the railways?

Results of "Reciprocal Buying"

The use of the power of traffic tends to produce the same effects in both cases. In other words, it tends both to give some of the competitors advantages and others disadvantages which are not in any way related to those forms of efficiency in management which will

result in improving the things sold or reducing the cost of producing them. It tends to drive the smaller competitors out of the field, and thereby to create monopolies, without conferring any compensating benefits upon the public. Carried to its logical extreme the practice of reciprocal buying not only tends to create monopolies, but plainly tends to increase the operating expenses of the railroad industry. This means, of course, that it tends either to reduce the net return earned by the railroad industry as a whole, or to render it necessary to make the public pay higher rates for transportation in order to enable the railroad industry to earn a fair return.

The Danger of Regulation

Perhaps the worst danger involved is that of additional regulation of railways. It is well known to those who have investigated the subject that the success of big shippers in using their traffic to influence railway purchases has caused numerous complaints to be made to both the Federal Trade Commission and the Interstate Commerce Commission. Some of those who have considered themselves injured by this kind of competition have even appealed to their senators and representatives. Is not the business of the country, and especially the railroad industry, subject to enough regulation already without business concerns and railway managements persisting in practices which directly invite additional government interference with business? Is it worth while for those who think they can use dangerous practices with more temporary success than their competitors to persist in using them at the risk of government action which would be permanently inimical to all concerned?

There is constant complaint that the railways are subject to too much regulation already. There is hardly a form of regulation to which they are now subject the reason or pretext for which has not been afforded by the disclosure of practices which would not stand publicity. Past experience demonstrates that publicity of unsound practices cannot long be avoided, and that the more prevalent they become the more danger there is that publicity will lead to regulation. Big business cannot hope indefinitely to use its power rather than its efficiency to crush its competitors without having its smaller competitors seek for protection from it, and when they do seek protection their recourse is generally likely to be an appeal for some kind of government action.

The best way to prevent government regulation is to avoid giving reasons or pretexts for it. Neither the railroads nor those who sell to them want government regulation of railway purchasing, but persistence in such practices as have been disclosed in recent hearings can be used only too effectively as an argument for further railway regulation.

Passenger Traffic Produces But 14 Per Cent of Earnings

WITHIN the last ten years the passenger earnings of the railways have declined from 22.7 per cent to 13.7 per cent of their total earnings, while their freight earnings have increased from 69 per cent to 77 per cent of the total. This means that there has been within a decade a decline of 40 per cent in the relative importance of passenger earnings.

Within the last 37 years, the relative importance of passenger traffic as a source of railway operating revenues has been cut practically in half, while the relative importance of freight traffic, on the other hand, has grown almost one-fifth.

In 1894, according to statistics of the Interstate Commerce Commission, passenger traffic produced \$26.60 and freight traffic \$65.20 out of each \$100 of revenues earned by the steam lines, the remaining \$8.20 being derived from the so-called auxiliary services—mail, express, etc. These figures represented relatively, the highest proportion of revenues ever produced by the passenger service and the lowest proportion ever produced by the freight service for the entire period for which information is available—since 1890.

Minor changes in these figures occurred from year to year until in 1916 passenger traffic was yielding but \$19.60 out of each \$100 of gross revenues, as compared with \$71.30 produced by the handling of freight. This drop in the relative importance of passenger earnings was only temporary, however, as by 1919 the passenger service had so far regained its relative losses as to yield \$22.70 out of each \$100 of revenues, as compared with the freight service's share of \$69.00.

Since 1919 changes have been swift and drastic. From producing in that year, \$22.70 out of each \$100 of gross earnings, the proportion of such earnings produced by passenger traffic amounted to only \$20.70 in 1921, \$18.10 in 1923, \$17.00 in 1925, \$15.70 in 1927, and \$13.70 in 1929, the lowest relative figure ever reached, so far as information is available.

In the meantime, freight traffic, from producing \$69.00 out of each \$100 of gross revenues in 1919, has since yielded, on this basis, \$71.10 in 1921, \$73.40 in 1923, \$74.40 in 1925, \$75.70 in 1927, and \$76.90 in 1929, this latter figure being the highest which has ever been reached.

The drop from \$26.60 out of each \$100 of revenues in 1894 to \$13.70 in 1929 as the proportion of gross railway earnings derived from passenger traffic is a relative decline in the importance of such traffic of 48 per cent. The marked effect of competition upon railway passenger traffic can be the only explanation. This is supported by the fact that the bulk of these relative passenger losses have occurred in the past ten years,

accompanied, since 1920, by actual losses as well. One effect of the losses of passenger business has been, of course, to make necessary larger freight earnings than otherwise would have been necessary. In 1929 the loss of passenger earnings under 1920 was equivalent to a nine per cent reduction in freight rates.

Business is Improving

FREIGHT car loadings are one of the best measures of general business activity, and they now indicate that business is improving. In comparison with corresponding months of the previous year loadings declined 5 per cent in November and December; 6.2 per cent in January; 6.9 per cent in February, and 8.2 per cent in March. In the two weeks ended on April 12 they showed a decline of only 5.6 per cent. They are only an approximate measure of the number of tons of freight carried one mile, and in a period of depression the actual decline of freight traffic and earnings usually is relatively greater than the decline in carloadings; but the improvement in loadings since the end of the first quarter of the year has been so marked that it can hardly fail to prove a correct indication that the worst of the decline of traffic had been passed at least temporarily; and there seems reason to believe that there will be no more months in which freight business will be relatively so poor as it was in the first quarter of this year.

The forecasters of business who have heretofore been most reliable seem to be almost unanimous in believing that general business in the second quarter of the year will be better than it was in the first quarter. Interest rates continue low, and therefore are a stimulus to investment. Commodity prices have been improving recently; in other words, instead of declining they have been becoming more stable, which is taken to indicate that they will soon be advancing. Manufacturing operations seem to be increasing more than seasonally. There was more than a seasonal decline in retail trade in March, but apparently this was due to the lateness of Easter, for retail trade also seems to have improved more than seasonally thus far during the second quarter of the year.

General business activity and the movement of freight by railroad are, of course, still much less than at this time a year ago. Even in the first half of April carloadings were less than in the same part of any previous year since 1924, and, in consequence, even for this month the railways will report very poor gross and net earnings. In a period such as this, however, the important question is not whether business is as good as in past years, but what its general tendency is, and at present, indications undoubtedly are that business is improving.

The Effect of Changes in Passenger Schedules

WHEN the Chicago & North Western established its Victory as a new train between Chicago and St. Paul on a 10-hr. 25-min. schedule on March 1, it started a cycle of readjustments in schedules that extended as far west as Puget Sound and Southern California. This illustrates the far-reaching effect that may be produced in these days of active competition for passenger traffic by a change in the schedule of a single train.

The recent general readjustment of schedules is the second that has been made on the western lines within the last two years. In January, 1928, the railways operating between Chicago and the Pacific Northwest announced a reduction in running time from 70 hr. to 68 hr., effective on May 6, whereupon the lines operating between Chicago and California announced, in February, a 61-hr. 15-min. schedule eastbound, effective on March 4. Puget Sound commercial interests then appealed to the roads serving that area for a 60-hr. schedule from Chicago, which the carriers declined to grant. Following this action, the Great Northern announced that it would reduce its running time to 63 hr. on June 10 and the other lines immediately announced similar schedules, effective June 9. On May 1, 1928, the Union Pacific announced a further cut to 62¾ hr. westbound and a 61¼ hr. eastbound, which reduction was met by the other lines. The Chicago-California roads then cut their westbound schedules from 63 hr. to 58 hr. and their eastbound schedules from 61¼ hr. to 58 hr., effective June 9. These various reductions had the effect of unbalancing the schedules to intermediate points, such as between Chicago and Denver and between Chicago and St. Paul, and, as a result, the Chicago-Denver time was reduced from 27 hr. 25 min. to 25 hr. 50 min. and the Chicago-Twin City trains were placed on an 11-hr. schedule.

When the Chicago & North Western put on its new train on March 1 of this year on a schedule that was 35 min. shorter than the fastest existing schedules, this cut was met immediately by the Chicago, Milwaukee, St. Paul & Pacific, which reduced the time of one of its trains to 9 hr. 50 min. While neither of these trains runs beyond St. Paul, their faster schedules resulted indirectly in cutting the time between Chicago and the Pacific Northwest through connections at St. Paul and to meet this situation the schedules of the Chicago-Puget Sound trains were cut 1½ hr. This led the Chicago-California lines to make corresponding reductions in their schedules from 58 hr. to 56½ hr. westbound and from 58 hr. to 57 hr. eastbound. Thus, a reduction in schedule of a single train on a 400-mile run has led to changes in nearly a dozen other trains operating five times that distance.



Additional Tracks and Platforms, St. Louis Union Station, Provide 60 Per Cent Greater Capacity

Country's Largest Trainshed Expanded 60 Per Cent

Crowded conditions at St. Louis Union station necessitated the construction of 10 additional tracks

ALTHOUGH the trainshed serving the Union Station at St. Louis is one of the two largest in the country, and in the face of the further fact that passenger traffic is declining in almost every section of the country, the facilities in this station had become so crowded by 1928, owing to a constant increase in the volume of mail and express matter handled and the fact that most of the roads entering this station are operating longer trains than formerly, that the Terminal Railroad Association found it necessary to increase the capacity of the station tracks and platforms by approximately 60 per cent. In addition, eight of the new tracks will accommodate trains of 20 cars, as compared with a maximum of 12 cars on the old tracks. The new facilities were placed in service on November 1, 1929, after an expenditure of \$4,000,000.

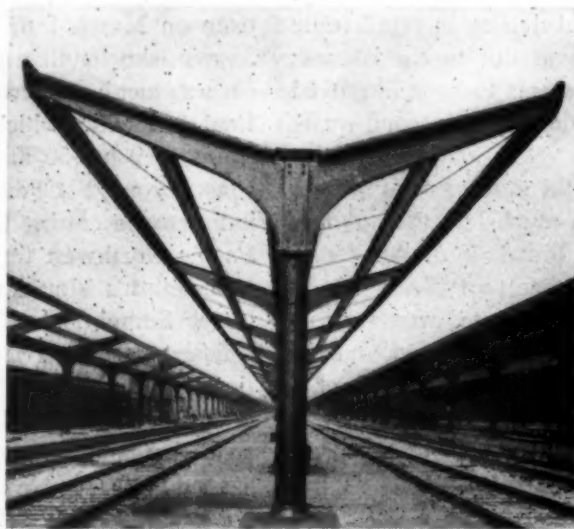
Owing to the intensive use which was being made of the station facilities and of the areas adjacent to them, unusual difficulties were encountered in carrying on the work. Expansion toward the east was impossible, as on this side the old trainshed extended to the line of Eighteenth street, one of the busy thoroughfares of the city. The existing station tracks and platforms could not be extended to the north to accommodate longer trains, because of the station building, while on the south, the proximity of a system of

east and west main tracks, which provide the approach to the station, made extension in this direction impracticable. For these reasons, the only direction in which expansion was possible was toward the west, and this involved the abandonment of the existing express buildings and facilities, and the westward relocation of Twentieth St.

In relocating the express facilities, it was necessary to select a site which would provide for convenient access to the station, while sufficient room for considerable expansion of these facilities was also desirable, since the present quarters were quite crowded and poorly arranged for convenient and economical operation. The only available site which would meet these requirements was located south of Clark Avenue,

between Seventeenth and Eighteenth streets, but this, in turn, was occupied by a coach yard which could not be dispensed with. After a thorough study of all the factors involved, it was determined to move the coach storage and cleaning facilities to Ranken yard, about one mile west of the station, and to add 20 storage tracks and four repair tracks, and to equip the repair tracks with drop pits.

The additional yard tracks have stub ends but are equipped with a series of cross-overs, a novel arrangement that provides access to both ends and avoids lost motion in handling equipment.



The Cantilever Arms Were Fabricated by Welding

This study also indicated that it would be necessary to follow a definite sequence in the construction of the various parts of the project, and that the construction as a whole would fall naturally into four major steps. It was obvious that the work of building the tracks and platforms could not begin until the express operation was moved to another location, and that this in turn could not be done until the ground was available for the completion of new express facilities.

The construction of the new coach yard then became the first step in the construction program. Upon its completion, the next step was to clear the site at Eighteenth street and Clark avenue, erect the express building and platforms, and construct the necessary tracks and place them in operation before the principal part of the program, the construction of the added station facilities, could be undertaken.

In the meantime, negotiations with the city had been carried to completion, which provided for the abandonment of Twentieth street and its relocation farther west, thus affording sufficient width for present needs and providing room for still further expansion when required. The express facilities were placed in operation on April 1, 1929, and the work of clearing the site for the new work, extending the station subway, relocating Twentieth street and constructing the reinforced concrete slabs which support the tracks and platforms over the subway and basement space, was started immediately.

The Express Facilities

The old quarters in which the express was handled consisted of five connected but independent buildings, originally operated by the individual express compa-

nies and later as a single unit by the American Railway Express. The new building, the main section of which is 70 ft. wide, fronts 700 ft. on Eighteenth street with an ell 62 ft. wide, fronting 220 ft. on Clark avenue, thus providing ample tail-board space for the peak hours of the day.

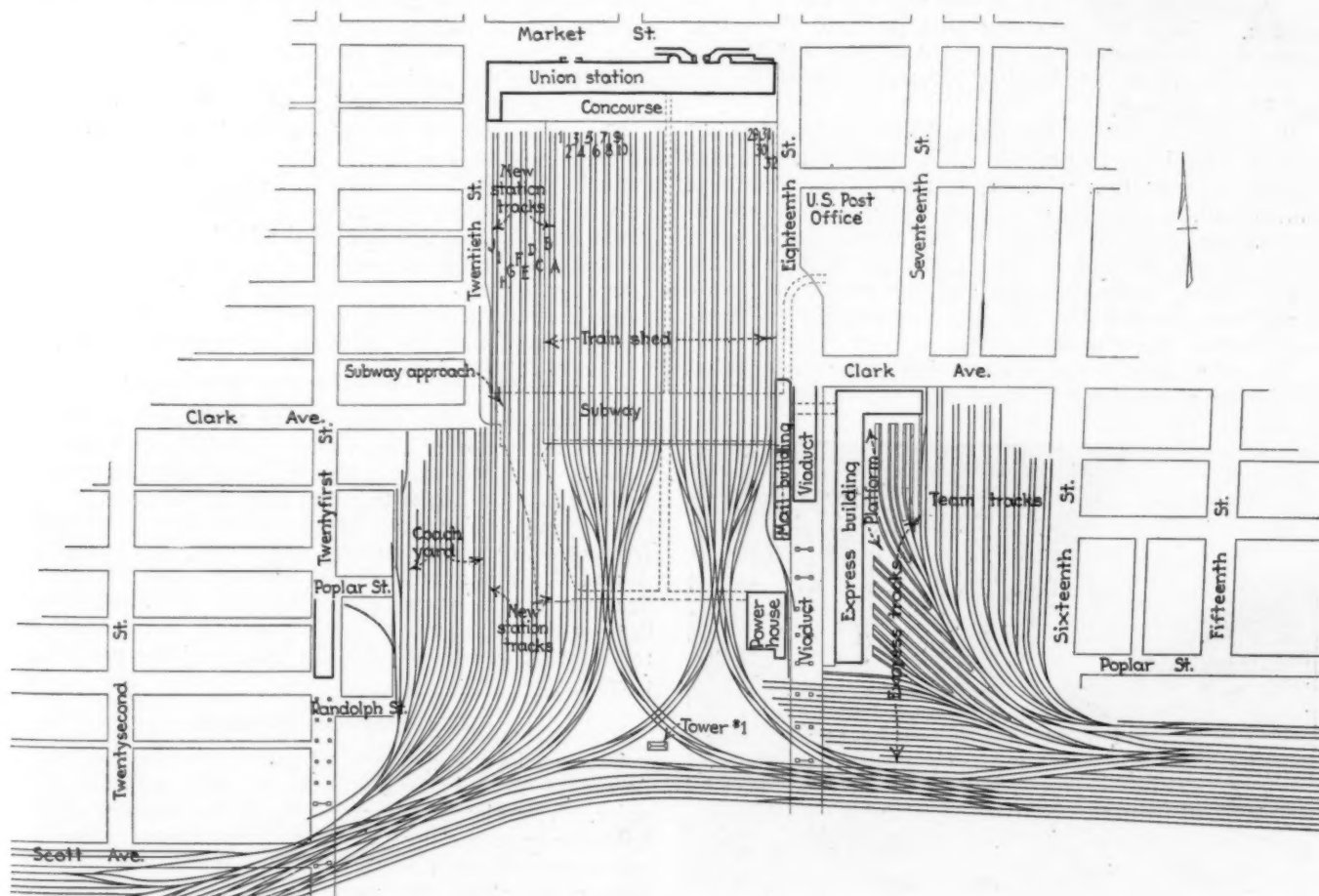
The tracks serving the old quarters had a total capacity of 40 cars, while 68 cars can be placed at a single setting at the platforms of the new building. The increased capacity is greater than the 70 per cent thus indicated, however, because the new facilities are operated as a single unit, while the arrangement of platforms for trucking is better, the floor space is unified and the ample tailboard space avoids congestion and permits quick and efficient receipt and delivery of express.

A ramp from the express platform connects with a subway under Eighteenth street, and this joins directly into the existing mail, express and baggage subway under the trainshed which gives direct access to all station tracks. This haulage, which is a small part of the entire express operation, is accomplished by means of tractors and trailers.

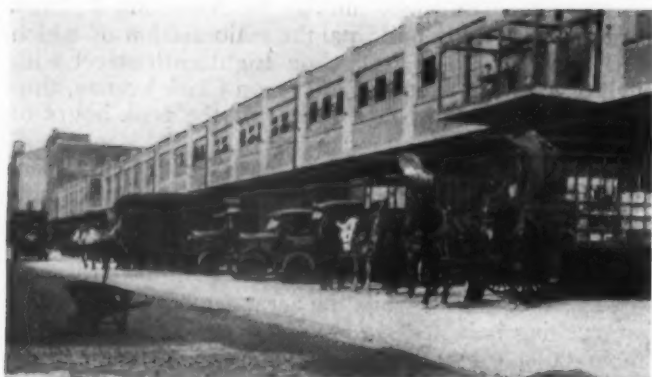
The coach-handling facilities were removed to Ranken yard late in 1928. The removal of the tracks and the work of constructing the new building and track layout commenced at once, and was prosecuted actively during the winter.

The New Station Facilities

The new station facilities consist of 10 tracks and 4 platforms, each of sufficient length to accommodate trains of 20 cars; the extension of one existing track and one platform to serve trains of 16 cars; an extension of the station subway under the new tracks; a



St. Louis Union Station, Showing Original Station Tracks and Additional Express and Passenger Facilities



Ample Tailboard Space Is a Feature of the Express Facilities

new ramp approach to this subway in Twentieth street, as relocated; and the addition to the station of a two-story baggage building, the second story of which is occupied by offices. The existing mail facilities were increased by the construction of a building at the track level, north of the Terminal Railroad Post Office building, which stands at the southeast corner of the trainshed.

As has been mentioned, in order to provide sufficient room for the new tracks and platforms it was necessary to relocate Twentieth street farther west. Tom street, a short street running from Engeria street to Clark avenue, was located on the alignment of Twentieth street extended from the north. South of Market street, Twentieth street jogged approximately one-half block to the east. The Terminal Railroad Association purchased all of the property in these narrow blocks between Twentieth and Tom streets and its northerly extension. Under an agreement with the city, Twentieth street was abandoned and relocated in line with Twentieth street north of Market between Engeria street and Market street.

Basements had been constructed under all of the old express buildings, to provide additional room and also to give a connection with the station subway, through which mail, baggage and express trucks gain access to the station platform. Two of the basements between the main subway and the south subway leading to the power house, were retained, and the tracks and platforms were carried over this space on a reinforced concrete slab of the mushroom type.

The third step in the construction program included the razing of the express buildings; the removal of the

structures on the property which was purchased; the relocation of Twentieth street; the construction of the extension to the subway and the subway approach in Twentieth street; and the construction of the flat slab to carry the tracks and platforms over the subway and the basement space which was retained.

The construction of the extension to the subway was complicated by the presence of an oval brick trunk sewer which was located approximately on the line of the sixth additional track, with its top about four feet above the subway floor, so that it was necessary both to relocate it, in order to permit the construction of the columns and footings which support the track slab, and to lower it a sufficient amount to avoid obstructing the passage of mail and baggage wagons and of station trucks enroute to the new platforms beyond the sewer.

This was accomplished by building a section of rectangular reinforced concrete sewer within the limits of the underground space, on an offset alignment and at such an elevation that the top of the new sewer is about two feet above the level of the driveway part of the subway floor. A ramp was then constructed on each side, the full width of the subway, to give an easy crossing. To provide the necessary drainage for the new subway, a sump was constructed near the sewer, into which all of the subway drainage lines were led, and automatic pumps, designed to work against the hydraulic head in the sewer, were installed in the sump to keep it cleared.

The station subway was then extended from the west line of the trainshed to the east line of Twentieth street, as relocated, and connected with a ramp which rises on an easy grade to the north to reach the street level. Under this arrangement all of the teaming in connection with the express operation is removed entirely from the station, and all mail and baggage wagons are segregated from the routes used by passenger vehicles in arriving at or leaving the station, thus materially increasing the capacity of the traffic arteries approaching the station.

The extension of the subway and the construction of the track slab over the basement space completed the third step in the construction program. The fourth step included the construction of the tracks, the platforms and the baggage and mail addition to the station, although the construction of the latter building had been started soon after the ground was cleared, as this part of the work could be done without interfering with the construction of the subway, sewer or track slab.

Additional Tracks and Platforms

No changes were made in the trainshed itself, although the westerly two tracks, which had served the express facilities, were extended, and the connections were changed to make them an integral part of the new track group. The new tracks are indicated by letter, from east to west, these two tracks being designated as A and B. The new platform between tracks B and C lies partly within and partly without the shed, while the existing platform between tracks 2 and 3 was extended to correspond with the length of the new platforms.

The Platform Shelters

The tracks are grouped in pairs with concrete platforms 14 ft. 1 in. wide, between every two adjacent pairs. The platforms are protected by shelters of the butterfly type, the design and construction of which involve several novel features. In working out this design, every effort was made to overcome the drainage difficulties which have always seemed to be inherent in



Completed Sheds and Platforms—Old Trainshed at the Right

platform canopies; to provide a sturdy form of construction, which would minimize the need for maintenance; and to reduce the cost without eliminating any of the desirable features of this type of shelter.

The structural supports of the canopies constitute one of the unique features of their construction, since they consist of cast iron pipe columns, 12 in. in diameter, weighing 5,100 lb. each, which perform the dual function of support and drainage. In working out the plans for the shelters, it was decided to eliminate rivets and bolts whenever possible. As a result, the structural sections above the columns are welded at all connections, except at the point where the wings fasten to the center section. The upper edge of the canopy frame consists of a 12-in. channel, to the web of which an 8-in. channel is welded, with the flanges down, in such a manner as to form a shelf for supporting the outer end of the roof covering. The gutter support consists of an I-beam, over the top flange of which a plank is laid, the gutter being fastened to the plank, while 8-in. channels were welded to the transverse ribs of the frame to support the upper edges of the gutter. A system of "sag rods," under tension, was introduced into each panel, as shown in the illustration, to stiffen the canopy frame and prevent distortion from wind or other temporary loads.

Another interesting feature is the manner in which the transverse ribs or wings of the canopy are fabricated. The general shape of the wings is that of a bracket in the form of a cantilever arm from the central support. Since the depth of this arm decreases as the distance from its support increases, and a deep fillet is introduced at the point of support, it was obvious that a rolled section could not be used. Manufacturers were consulted, and it was determined that the cost of fabrication could be reduced materially by welding, as compared with the usual method of riveting.

In fabricating these wings, I-beams of the proper depth and length were selected, and a section of the web was cut out in the form of a gore, by means of a cutting torch. From the point where the lower flange begins to form the curve of the fillet, the web was cut close to the flange, which was then shaped to a template. A web plate of the proper shape to form the fillet was then introduced and all seams were welded. The welded seams can be seen in one of the illustrations, but they cannot be detected after the metal is painted.

The roof covering consists entirely of Robertson Protected Metal. Both the gutters and roofing sheets were preformed at the shop, so that they could be assembled on the job with a minimum outlay of time and labor. After the gutters were placed, the upper ends of the corrugated roofing were inserted under the leg of the 12-in. channel and laid on a wood nailing strip which rests upon and is fastened to the 8-in. channel which was provided for this purpose. The lower ends of these sheets, which rest upon the gutter, are laid in cement. They are held securely in place by means of clips instead of nails. This form of construction makes a completely weather-tight job in which it has been unnecessary to use flashing.

As an indication of the savings which were effected by this design and the construction methods which were employed, the entire system of platform shelters was erected at a cost of \$20 per lineal foot, as compared with a cost of \$29 or more per foot in similar shelters, where structural columns, riveted connections and other types of roofing have been used.



Method of Constructing Roof and Gutter

The baggage and mail room, which constitutes an addition to the station building, is designed to handle only the incoming baggage which arrives for local delivery, thus segregating from the main baggage operation of inter-train transfer all baggage which must be held for storage or because of slow delivery; and a small amount of sacked mail which can be handled more expeditiously through this channel than through the main transfer post office at the station. The main features are a large floor area, which avoids congestion and permits rapid handling of the baggage trucks, and a wide high platform around two sides of the room, upon which trunks can be unloaded from the trucks without the necessity of lifting or dropping them. Since this platform is at wagon bed level, baggage can also be delivered directly to the transfer wagons without being lifted.

The entire project was carried out under the general direction of Henry Miller, president, and H. J. Pfeifer, chief engineer, who also developed the design and superintended the construction. The work was done by the United Constructors, Inc., Philadelphia, Pa., S. C. Willis being directly in charge for the contractor.

The improvement in the passenger facilities was made on a scale to provide for 25 years' growth of business, based on past experience, considering the present volume of traffic, the previous rate of increase and taking into account the capacity of these facilities as constructed, and other essential factors.

* * *



Old and New Power on the Texas & Pacific at Fort Worth, Tex.

Pennsylvania Tests Unit Loading of Clay Products

THE Pennsylvania has been experimenting with a unit method of loading shipments of clay products, as a result of which it has effected an unusual reduction in breakage of this class of merchandise. In its work it has endeavored to overcome damages that occur from the rise and fall of the lading as well as from the forward thrust.

In the handling of large sizes of sewer pipe, a metal strap of .037 in. gage was applied around the several pieces of pipe in each stack, after the pipe was loaded in the customary manner, that is, on its side and lengthwise of the car. The tests were successful in preventing the rise and fall of the pipe and they are being continued for the purpose of finding a means of reducing the loading cost to a minimum.

The tests on tile shipments showed that under ordinary rigid wood bracing, the average breakage per car was 747 pieces, while in the experiment in which straps were used, this average was reduced to 18 per car. The tests with the tile involved the problem of overcoming the causes of small chips at the edges of the pieces. Each tile is normally protected with indented paper, but the tests showed that the principal cause of the chipping was the shifting of the pile out of alignment in transit, thereby permitting the edges to come in contact with one another. To obviate this, diagonal braces were applied to the side faces of the unit to hold the load square and to minimize the chipping. In the final tests with the tile shipments, 1¼ in. metal straps of .040 in. gage were used, one of which encircled the load from end to end, while two more were used as diagonals. At each end of the load a gate was provided to hold the tile compactly in place, while a notch in the gate at each of the corners provided anchorage for the diagonals. The ends of the straps were sealed in the customary manner.

Another series of tests on clay conduit were conducted under the supervision of the shipper, the consignee, representatives of various carriers and the American Railway Association in which the unit load method was adopted. The first cars so loaded reached destination in excellent condition. There was no damage in one car and not more than four broken pieces in any car, which is an improvement over rigid wood bracing, for which the claims amount to \$30 to \$40 per car.

One of the interesting developments of the test loading of glazed building tile was the serious exposure to claims for breakage that are not chargeable to the carrier. During the tests, a detailed check was made of damaged pieces at destination, and at one point it was discovered that 65 per cent of the total damage was not chargeable to the carrier. Tile, in which the defects consist of chipped edges, are sold with the thought that the chipped side will be covered when placed in a building, but at the destination the draymen often rejects these chipped pieces to avoid the possibility of criticism when unloading them at the building operation.

THE KANSAS STATE BOARD OF HEALTH, reporting on railroad-highway grade crossing accidents in that state, finds that in 1929 there were 32 accidents in which trains hit automobiles, resulting in 44 deaths and 15 injured, while there were 9 accidents in which automobiles hit trains, resulting in 14 deaths.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended April 12 amounted to 911,310 cars, a decrease of 61,842 cars as compared with the corresponding week of last year and of 1,349 cars as compared with 1928. Grain and grain products showed an increase of 5,408 cars, while all other classes of commodities showed reductions, and loading of miscellaneous freight was 30,643 cars less than in the corresponding week of last year. Loading in the Pocahontas, Southern, Central Western and Southwestern districts was greater than in the corresponding week of 1928, and the Southwestern district reported increase as compared with both 1928 and 1929 but all districts except the Southwestern showed a reduction as compared with 1929. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, April 12, 1930			
Districts	1930	1929	1928
Eastern	207,645	230,696	217,303
Allegheny	187,516	204,755	192,413
Pocahontas	51,484	52,564	47,611
Southern	147,876	156,989	147,840
Northwestern	106,412	116,087	109,306
Central Western	132,228	134,868	126,677
Southwestern	78,149	77,193	71,509
Total Western Districts	316,789	328,148	307,492
Total All Roads	911,310	973,152	912,659
Commodities			
Grain and Grain Products	39,950	34,542	36,914
Live Stock	23,241	24,216	24,567
Coal	132,611	137,022	140,681
Coke	10,193	11,699	9,908
Forest Products	57,360	69,152	62,425
Ore	11,479	15,121	8,665
Mdse. L. C. L.	252,674	266,955	259,377
Miscellaneous	383,802	414,445	370,122
April 12	911,310	973,152	912,659
April 5	907,928	958,225	919,352
March 29	885,159	969,196	948,743
March 22	875,542	962,400	950,194
March 15	881,187	958,601	942,572
Cumulative total	12,177,939	13,111,753	12,711,548

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended April 12 totaled 57,080, a decrease from the previous week of 1,174 and a decrease from the corresponding week of 1929 of 7,227.

	Total Cars Loaded	Total Cars Rec'd. from Connections
Total for Canada		
April 12, 1930	57,080	36,868
April 5, 1930	58,254	39,059
March 29, 1930	57,391	36,503
April 13, 1929	64,307	44,519
Cumulative Totals for Canada		
April 12, 1930	853,928	554,346
April 13, 1929	933,097	649,563
April 14, 1928	932,718	595,329

THE CANADIAN NATIONAL has just completed the construction of a first-aid instruction car, the first of three that will be used to extend first-aid instruction to employees in outlying sections of the system.

LONDON & NORTH EASTERN (Great Britain) motive power requirements for 1930 total 144 new locomotives. These include 15 of the "Sandringham" 4-6-0 class for express passenger service between London and the eastern counties; 15 "Shire" class express passenger locomotives; 26 three-cylinder 2-6-2 tank locomotives; 14 three-cylinder 2-6-0 fast freight locomotives; 15 three-cylinder 2-8-0 freight locomotives; 35 locomotives for general service, and 24 switchers, mostly of the 0-6-0 type. The company will also try out a new 47-ton, 200 hp. steam rail coach.



The Santa Rita Mining Operations. Left: The Central Pit; Center: One of the World's Largest Shovels; Right: The Tipple and Santa Fe Mine Yard

Mountain Operations Move Smoothly

Atchison, Topeka & Santa Fe handles ore traffic under difficult conditions

IN the mountains of southwestern New Mexico, the Santa Fe handles a daily traffic of 16 ore trains, 4 merchandise trains and 2 mixed trains with a regular assignment of only three locomotives. Furthermore, in this territory, ore trains of 1,650 tons or more are operated safely down grades of more than 3 per cent. The entire operation is handled on a most efficient and economical basis, and the handicaps imposed by the extremely rough country are overcome by adroit engine assignment and by highly developed operating methods that provide for efficiency.

The ore is handled on the extreme west end of a branch line extending from Rincon, N. M., to Whitewater, 85 miles, thence, via one branch to Santa Rita, 17 miles with a six-mile spur from Hanover Junction to Fierro, and via another branch from Whitewater to Silver City, 16 miles, as shown on the map. The spread of the operations over these various branches is another factor that had to be given consideration in developing the present operating plan.

The principal tonnage is obtained from a mine at Santa Rita, in the form of copper ore and lead and zinc concentrates. This mine is one of the oldest in this country, having been worked by the Spaniards in the sixteenth century, when the ore was transported by mule back to Mexico City. Since the present company has operated this mine, 144,000,000 tons of rock have been moved, consisting of 49,000,000 tons of ore and 95,000,000 tons of strippings. Gold, silver, iron, copper, lead and zinc ores are also obtained at mines in many other locations on the branches west of Whitewater.

The copper ore from the Santa Rita mine moves to Hurley, 8.4 miles down the mountain, for conversion into concentrates, which, in turn, move via Rincon to El Paso, thus involving the spotting of loaded ore cars and of empty concentrates cars, and the pulling of empty ore cars and of loaded cars of concentrates. Some of the copper ore produced at other points than Santa Rita moves to Douglas, Ariz., via Deming, but the majority moves to the smelters at El Paso. The iron

ore is shipped to Pueblo, Colo., the lead concentrates go to El Paso, and the zinc concentrates to Canyon City, Colo., Blackwell, Okla., Amarillo, Tex., and Peru, Ill.

Unusually heavy grades are encountered in these operations, such grades being entirely against the loaded movement of merchandise and the empty movement of ore cars. From Deming, 4351 ft. above sea level, there is a steady climb to the junction at Whitewater, which is at an elevation of 5,154 ft. This ascent of 803 ft. in 31.2 miles is accomplished with a ruling grade of 73.9 ft. per mile, between Spalding and Faywood. From Whitewater, the Silver City branch climbs 705 ft. in 16 miles, to an elevation of 5,859 ft., with a ruling grade of 117.2 ft. per mile, immediately east of Silver City. On the Santa Rita branch, a climb of 1,067 ft. to an elevation of 6,221 ft. is made in 17 miles, the ruling grade being 168.4 ft. per mile. The Fierro spur climbs from Hanover Junction, 5,947 ft. to Fierro, 6,698 ft., or 751 ft. in six miles, on a grade of 158.4 ft. per mile for practically the entire distance. To facilitate the mountain operations, the track on all these branches is well maintained, and 90-lb. rail is used throughout, a most important factor, when the heavy loads and heavier power are considered.

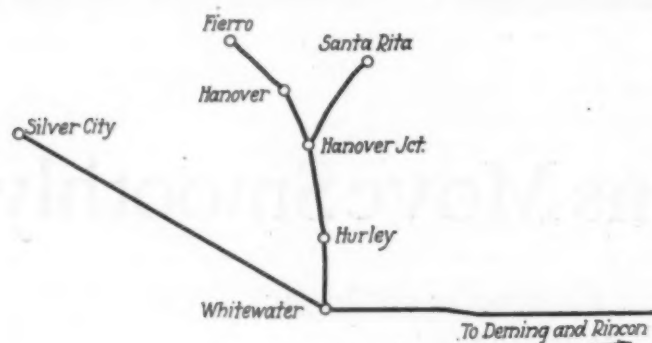
The Car Supply

The principal tonnage is obtained from the mine at Santa Rita. The mining company operates 19 locomotives in the pit, with a daily assignment of 51 crews, also 15 shovels with 18 shovel crews. A total of 118 mine cars are provided for moving the ore from various parts of the mine to the tipple, through which it is loaded into railway equipment.

This tipple loads an average of eight trains daily for movement to Hurley. The Santa Fe provides 173 80-ton capacity ore cars, which are kept in shuttle service between the tipple and the plant at Hurley. All of these cars are equipped with empty and load brakes for mountain operation. However, in the loaded move-

ment downgrade, when necessary to stop the trains and cut off the locomotive to pick up additional cars, a sufficient number of handbrakes are also set to hold the train. Particular stress is, of course, laid upon this matter of braking on the downgrades, and this feature is carefully supervised. The fact that the crews are, in general, made up of men with experience in mountain operation, has aided materially in the high degree of safety with which the ore branches are operated.

In addition to the ore cars, 125 specially constructed cars are provided by the Santa Fe for handling the concentrates. These cars operate in shuttle service between Hurley and El Paso, 169 miles. By careful supervision,



The Southwestern New Mexico Mining District of the Santa Fe

it is possible also to utilize all inbound box and gondola cars for outbound loading of ore not moving in this special service, and going longer distances to the destinations previously named, so that, except for the ore cars and concentrates cars in this shuttle service, there is little or no empty car movement.

Operating Methods

The branches are a part of the Rio Grande division of the Santa Fe, which also includes the main line between El Paso and Albuquerque. The superintendent's headquarters are at the latter point, about 275 miles from this mining district, so that the immediate supervision of operations is entrusted to an assistant trainmaster, with headquarters at Hurley. This not only affords a close contact with the work, but also provides a responsible officer on the ground to handle matters with the various mining companies.

Three Mikado locomotives, having a tractive force of 47,700 lbs. each, are assigned to the district for the handling of ore traffic. Since there are no enginehouse facilities nearer than Deming, it was necessary to devise some arrangement to give these locomotives attention. This is accomplished by trading off the engine bringing in the Deming local, for one or the other of these engines, as often as is necessary, so that all engines get to Deming periodically for enginehouse attention.

The assignment of men has been put on the most efficient basis possible. The first ore crew is called at Hurley for 7 a. m., and proceeds to Santa Rita immediately with 30 empties, bringing back 30 loads, approximately 1,650 tons, from the tippie to the plant at Hurley. This crew makes four such round trips before going off duty.

At 8:45 a. m., another crew leaves Hurley for Santa Rita with merchandise, coal, dynamite and other mine supplies. It fills out to tonnage with empty ore cars,

released from the repair track at Hurley. These cars are distributed at the various mines, and, on the return run, this train picks up ore at Hanover Junction and other intermediate points. The same crew makes another trip from Hurley to Fierro, handling merchandise, mine supplies and empty ore cars for distribution, and on the return trip it picks up ore along the Fierro branch and at Hanover Junction.

The first of these two crews to finish its tour of duty turns the engine over to the second Santa Rita ore crew, which goes on duty at 5 p. m., and, like the first ore crew, makes four round trips to the tippie, hauling empties up and ore down, usually tying up about midnight.

These road crews are supplemented by a switching crew which goes on at 8:30 a. m., handling the Hurley yard and plant switching, spotting the ore on the ore dock for unloading, and pulling the loaded cars of concentrates. This engine is also double-crewed, being turned over to the second switching crew at 5 p. m., for another eight-hour switching shift. The switching also involves taking the cars over the scale for weighing and placing them in the train yard for outbound movement.

The inbound freight is brought from Deming to Hurley by an early morning train. The tonnage limit is 2,050 tons from Deming to Whitewater and 1,050 tons from Whitewater to Hurley, and this train averages close to this tonnage, the necessary set-out at Whitewater consisting largely of freight for the Silver City branch, which could not be taken to Hurley in any event.

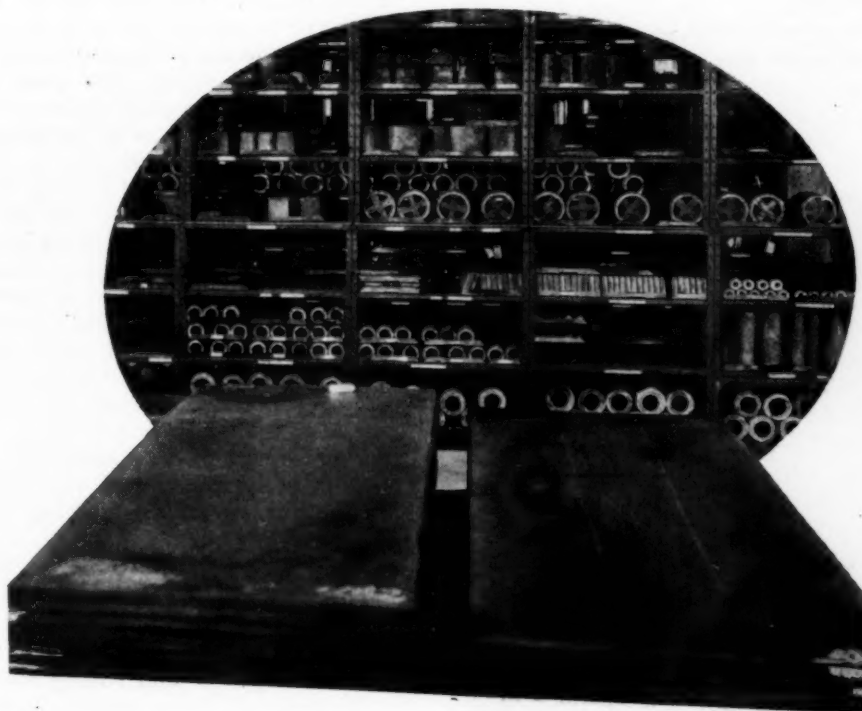
One mixed train is operated daily from Silver City to Santa Rita, via Whitewater. This crew performs the station switching at Silver City, including mine pick-ups. The loads are brought down to Whitewater, and set out for pickup on the eastbound trip by the Hurley-Deming local. The mixed train then picks up the set-outs at Whitewater for Hurley and the Santa Rita and Fierro branches. West of Hurley, the only freight work performed by this train usually is the carrying of meat and produce to the various mining camps. On the return trip, the set-out freight for Silver City is picked up at Whitewater. This same train also handles a daily car of mail, express and baggage between Silver City and Santa Rita and Fierro, picking up the set-outs made at Whitewater by the one passenger train operated from Rincon to Silver City. On the Santa Rita and Fierro branches, this train provides the only passenger, mail, baggage and express service.

By means of a careful study of the needs of these mountain branches the Santa Fe has been able to provide an adequate and satisfactory service on an unusually efficient basis, whereby the maximum service is obtained from all man and motive power.

THE GOVERNMENTS OF CHILE AND ARGENTINA have reached a definite agreement for the construction of a third transandine railway, according to reports from London. The route, as now surveyed, includes 64 miles of new construction in Chile and 308 miles of new line in Argentina, but will shorten the present distance from Antofagasta, the principal port of northern Chile, to Salta, Argentina, by 68 miles. The new road, built to the metre (39.37 in.) gage, crosses the international border at a height of 12,512 ft. above sea level and reaches its highest point (14,520 ft.) at Chorrillos pass, Argentina. As an example of the engineering difficulties involved, eight miles of line will be required at one point to gain one mile of distance.

Specifications—The Tap Root of New York Central Buying

How a great railroad guards against waste and accident in spending and using \$150,000,000 of supplies a year



N. Y. C. Materials Are Bought to Specification

THE New York Central lines spend around \$150,000,000 a year for materials and supplies for maintenance and construction. They annually buy from 200,000 to 250,000 tons of steel rails and 75,000 tons, or more, of track fastenings. In this purchasing, specifications, materials inspection and research are being relied upon as never before to protect the railroad's many interests, whether they be economy of purchasing, speed of delivery, uniformity of grade, improvement of quality or safety of service. This work is in the background, but is considered of the greatest importance to the system. It is safe to say that specifications and inspection are behind most of this corporation's buying, while the roots of organized research are reaching into every operation.

Specifications Cover a Wide Range

This article will deal only with the New York Central specifications, leaving the other subjects to later consideration. The specifications are outstanding for their comprehensiveness. They are not merely forms on the New York Central lines, but are prepared with unusual care and skill and serve not only as the law in buying, but also as guide books in manufacture.

There are specifications for rail and track materials; for lumber, ties and other forest products; for fuel; for commissary supplies; and for car and locomotive

materials. In the latter branch, the purchasing is almost completely covered by approximately 100 specifications, as follows:

FERROUS METALS—STEEL

Carbon steel freight car axles	High carbon steel bars
Boiler and firebox steel.	Heat-treated knuckle pivot pins
Iron and steel chains for general use	for couplers
Carbon steel passenger car and locomotive tender axles	Steel wheels
Carbon steel bars for springs	Steel brake beams for passenger train cars
Steel rivets for boilers	Brake beams for freight equipment cars
Carbon steel billets	Coach keys
Carbon steel castings	Steel tires
Steel tubes, flues and pipes for steam boilers	Normanized carbon vanadium locomotive forgings
Rolled steel bars and shapes	Helical springs
Locomotive forgings	Carbon vanadium billets
Miscellaneous rolled steel plates	Galvanized sheets
	Cast steel side frames

FERROUS METALS—IRON

Cast iron wheels	Large wrought iron forgings
Double refined wrought iron bars	Malleable iron castings
Wrought iron pipe	Staybolt iron
Gray iron castings	Crane iron
Foundry pig iron	Wrought iron truck equalizers
No. 1 wrought iron bars	Hollow rolled staybolt iron

NON-FERROUS METALS

Metallic packing	Ingot copper
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Babbitt and anti-friction metal Journal bearings—locomotive
Zinc tenders and cars
Solder

CEMENT, LIME, ETC.

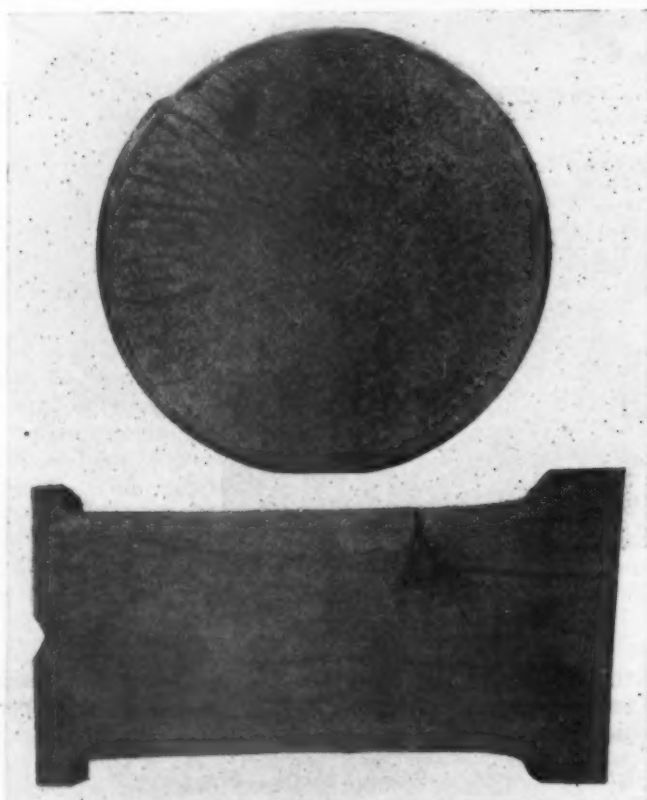
Asbestos cement for boiler Manila rope
lagging and pipe covering

PAINTS, OILS, VARNISHES, ETC.

Dark red oxide semi-paste paint	Graphite front end paint
Turpentine	Turpentine substitute
No. 1 lard oil	Linseed oil
Varnish cleaning soap	Black underframe finish
Wood preservative	Black enamel
Thinning oil	Spar varnish
Black paint for freight cars	Turpentine Japan drier

RUBBER AND LEATHER GOODS

Wrapped air hose for pneumatic tools	Braided air hose for pneumatic tools
Cold water hose	Air brake hose
Tender tank hose	Air signal hose



Specifications Are a Protection Against Imperfections Like These in Railway Materials

Steam hose	Air brake and air signal hose
Boiler washout hose	gaskets
Rubber matting	Solid sheet rubber packing
Leather belting	

MISCELLANEOUS

Foundry coke	Plate and sheet glass
Sponges	Cushions
Soda ash	Glass panels for glass guards
Hand lantern globes	Glass tubes for boiler water gages
Colored cotton wiping waste	Bell and signal cord
Colored cotton lubricating waste	White cotton wiping waste
Wool-cotton journal box packing, 40-60 mixture	Hammers
Brushes	Air brake cylinder compound

Helping the Manufacturer

There are a number of important parts to every New York Central specification. Of special significance, this road holds to the opinion that specifications should begin with a brief but clear general description of the desired material and an explanatory statement that will

help the manufacturer to understand the intended uses for the material. Again, it is recognized that while it would be of marked advantage to be able to determine the anticipated service quality of material by tests and inspection only, this is not entirely possible in some cases, and the processes by which the material shall be made or treated after manufacture, or both, are, therefore, specified.

Next in the New York Central specifications comes the most important and usually the most difficult part—the enumeration of the tests to which the material must be subjected in order to determine its fitness for service and the limits within which the results must fall to be satisfactory. The tests are as few and as simple as will serve to secure the needed quality and properties. In this connection, the importance of the specification writer is emphasized. He must have a good general knowledge of the manufacture, with its limitations and difficulties, as well as a thorough knowledge of the service of the material, and to these he must add a knowledge of tests and testing methods and their relation to service quality. If the article is such that safety of operation depends on its integrity, this feature receives a lion's share of attention.

Supplementary to the statement of tests required, it is customary to indicate the number of samples to be tested and the manner of taking them. If the methods of tests are empirical or not generally known, the details are described so that the practice of all operators will be uniform. In many cases, requirements for surface finish, general workmanship, permissible local defects in individual pieces, variation in dimensions, also instructions regarding packing and marking, are included.

Committees of Eleven

The New York Central lines have developed an effective way of handling this problem. This will appear from the method of preparing the specifications for the motive power and rolling stock departments. The preparation of these specifications used in the motive power and rolling stock departments of the New York Central System is handled by an organization known as the New York Central Lines' Equipment Materials Committee. This committee is comprised of the superintendent of motive power and the superintendent of rolling stock of each of the roads of the system, as well as the engineer of tests, the engineer of materials, the vice-president of purchases and stores, and other system officers who may be interested in the particular subject. This committee is divided into two sections: (1) A motive power section, which is comprised of the superintendents of motive power; and (2) a rolling stock section, which is comprised of the superintendents of rolling stock, with other system officers already mentioned. Each section has its own chairman and the regular committee of each section consists of 11 men.

If a proposed specification covers material used only in the motive power department, it is submitted to the motive power section for action, and vice versa, while, if used in both departments, it is known as a "joint" specification and is submitted to both sections.

For specification purposes, materials used in the motive power and rolling stock departments are divided into classes and designed serial numbers, as follows:

Ferrous metals—steel	Nos. 1001 to 1075
Ferrous metals—iron	Nos. 1076 to 1099
Non-ferrous metals	Nos. 1100 to 1149
Cement, lime, etc.	Nos. 1150 to 1199
Paints, oils, varnishes, etc.	Nos. 1200 to 1299
Rubber and leather goods	Nos. 1300 to 1349
Miscellaneous	Nos. 1350 to

The request for a specification to cover material used in either of these departments may come from an officer connected with the locomotive or car shops of any of the system lines, or with the operating department of the carrier, or from the purchasing agent who finds the buying unsatisfactory without a definite standard of quality. However the request originates, it is referred to the committee, and the engineer of materials, as a member, is designated to prepare a proposed draft of the desired specification.

The first step of the engineer of materials is usually to study the service of the material, and particularly to secure samples representing lots which have given

facturers are, therefore, consulted. Sometimes it is decided to use the specification experimentally for a few months and to give special attention to the quality of the material received. In such cases, both the laboratory tests and service results are considered, as these may lead to further modification of the requirements.

President Signs Specifications

When the whole study appears to be complete and the results satisfactory, the proposed specification is submitted to the specification committee for approval. After reviewing the proposed specification, the committee makes whatever changes it may deem necessary. When the committee's unanimous approval has been secured, the specification is prepared in final form, numbered and submitted (in the case of a joint specification) to the chairmen of the motive power and rolling stock sections for signature. When passed by them, it is then submitted to the president of the New York Central system for final approval and signature.

After the president's approval and signature have been secured, the specification is printed and distributed to all departments and parties concerned. It then becomes the official standard for all of

NEW YORK CENTRAL LINES
AND RUTLAND R. R. CO.

New York Central Railroad Co.,
Boston and Albany Railroad,
Michigan Central Railroad Co.,
Chicago, Rock Island & Pacific Railway Co.,
Pittsburgh and Lake Erie Railroad Co.,
Cleveland, Cincinnati, Chicago & St. Louis Railway Co.,
Canadian Northern Railroad Co.,
and
Lancaster and Carlisle Lines

Evansville, Indianapolis & Terre Haute
Railway Co.,
Pere Marquette Railway,
Indiana Harbor Belt Railroad Co.,
Chicago River & Indiana Railroad Co.,
Chicago Junction Railway,
Rutland Railroad Co.

SPECIFICATION No.
RUBBER MATT

The material desired under this specification is rubber
grades, or may be specified on the order:

Grade "A" ————— Covered
Grade "B" ————— Bare
Grade "C" ————— Bare

I. MANUFACTURE

1. (a) Grade "A."—This matting shall be made
back of which shall be frictioned and vulcanized
grade known as "40-lb.-2.50." The upper surface
angular corrugations per inch, these corrugations
exceeding 1/16 in. in depth.

(b) Grade "B."—This matting shall be made
back of which shall be frictioned and vulcanized,
known as "40-lb.-2.50." The upper surface
be made of pebbles and less than 9-32 in., or more than
5-32 in., or more than 1/8 in. in height above the
flat line through the center of the knote shall be
lateral triangles with sides 1/8 in. long. In the ex-
posed the above shall not exceed 1-32 in.

(c) Grade "C."—This matting shall be as
described, or sample on which the order is based.

II. TEST

Process. 1. A strip 1 in. wide will be cut lengthwise from
center by separating a 4-in. width from the top
edge and rubber shall not separate under strain 4 in.

Friction Test. 2. This strip will be cut lengthwise from
center by separating a 4-in. width from the top
edge and rubber shall not separate under strain 4 in.

Tensile Test. 3. This strip will be cut lengthwise from
center by separating a 4-in. width from the top
edge and rubber shall not separate under strain 4 in.

Spec. No. 1000

III. TENSION TEST SPECIMENS

8. (a) The tension test specimens representing each mat shall be taken from a test ingot
taken during the pouring of the mat, and shall have removed approximately the same amount
of wear as the class which it represents.

(b) The specimens shall conform to the dimensions shown in Fig. 1. The ends shall be
of a form to fit the holders of the testing machine in such a way that the load shall be axial.

Fig. 1.

Machine not
less than 1/4" — 2-1/4"
3-8" Gage Length

IV. GROUPING

9. (a) One tension test shall be made from each
(b) If any test specimen shows defective machining
and another specimen from the same mat is substituted.

(c) If the percentage of elongation of any test spec-
imen 7, and any part of the fracture is more than 1/4 in.
indicated by scribbles appearing marked on the specimen
report bar shall be allowed.

10. If the results of the tension test for any mat
Section 7, a report may be made on a specimen cut from
the expense of the manufacturer. This report shall be
made of Section 7.

V. PERMISSIBLE VARIATIONS

11. The size shall be grouped as to outside diameter

12. This may be furnished with all surfaces as follows
specified within the following permissible variations:

(a) Height of Flange.—When specified 1 1/4 in. the
very 1/4 in. under, and when specified 1 in. may vary 1/4
Class "C" driving drive, which may vary 1/10 in. under

(b) Thickness of Flange.—The thickness of flange
or 3/32 in. under that specified.

Spec. No. 1000-A

VI. WORKMANSHIP AND FINISH

13. All castings shall substantially conform to the size and shape shown on purchaser's
drawings, and shall be made in a workmanlike manner.

14. (a) The castings shall be free from injurious defects.
(b) Minor defects which do not impair the strength of the castings may, with the
approval of the inspector, be welded by an approved process. The defects shall first be
cleaned out in a solid metal, and after welding the castings shall be annealed, if required by
the inspector.

(c) Castings shall not be offered for inspection if covered with paint, rust, or any other
substance in such an extent as to hide defects.

VII. MARKING

15. The manufacturer's name or identification mark and the specified pattern number shall
be cast on all castings. In addition the month and year when made shall be cast on all rollers,
brake shoes, frames, wheel centers and similar castings. The location and size of numbers
shall be agreed upon by the manufacturer and the purchaser. In accordance with the standard
portion of the individual industry to identify individual castings, a serial number may be
cast on the neck number may be stamped on rollers, truck sides, frames, wheel centers and
similar castings as agreed upon by the manufacturer and the purchaser. The neck number
shall be highly stamped on all other castings weighing over 150 pounds.

VIII. INSPECTION AND REJECTION

16. The manufacturer shall notify the N. Y. C. Lines Material Inspection Bureau, Colli-
ers, Ohio, at least five days in advance of the time material will be ready for inspection.

17. All tests (except check analysis and inspection) shall be made at the place of man-
ufacture and the inspector representing the Railroad Company shall have free entry at all
times while work on the contract is being performed, to all parts of the man-
ufacturer's works which concern the manufacture of the material ordered. The manufacturer
shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material
is being furnished in accordance with these specifications.

18. (a) Any lot of castings failing to meet the requirements of this specification and
individual castings having conspicuous physical defects will be rejected.

(b) Castings which show injurious defects subsequent to their acceptance at the man-
ufacturer's works will be rejected and returned to the manufacturer at his expense.

Recommended:
New York Central Lines
Equipment Materials Committee.

John C. Hildley
Motive Power Chairman.

Wm. H. Hays
Rolling Stock Chairman.

Approved: *P. B. Jones*
President

New York, N. Y., June 1, 1904.
Spec. No. 1000

Typical Pages from New
York Central Specifications
Which Are Printed on Letter
Size Paper

successful service as well as those which have failed in one way or another. These are analyzed and tested by all methods likely to be useful in differentiating between the good and the bad. It is often desirable to secure from several reputable manufacturers, samples of their various grades of the material. Laboratory tests of these samples, by comparison with the test results from the material taken from service, may serve as a basis of selection, or it may be necessary to try them in actual service.

Commercial Practice Studied

Obviously, it is useless to specify a variety or quality of material which cannot be purchased. It is preferable to select a variety and quality which is produced regularly by several makers. In important cases, if the purchases are sufficiently large, it may be desirable to have a special quality manufactured. The manu-

the roads constituting the New York Central System and is used when the material covered by the specification is required for use in the motive power and rolling stock departments of any of the lines, or for the construction of new equipment.

Keeping Up-to-Date

But this does not end the work of the specification committee, and, particularly, of the engineer of materials, who conducts the detailed investigation for the committee. The whole system must keep up-to-date. Therefore, both service conditions and the new de-

velopments in available material must be studied continually. As a result, there are always materials under special study for the formulation of new specifications, or the revision of old ones. Special, and often quite elaborate, investigations, involving both laboratory and field work, are sometimes required.

When a revision of a specification is desirable, the specification is rewritten by the engineer of materials and submitted to the committee in a proposed form for review and approval, and the revised specification, before it is reissued, goes through the same process as a new specification. When reissued, a suffix (A, B, C, etc.) is added to the specification number, together with the date of revision. It is then distributed with instructions to destroy the previous issue.

Rail Specifications

Rails represent the largest and most important tonnage of the various steel commodities purchased by the New York Central lines. It was reported at the outset that the yearly purchases range between 200,000 and 250,000 tons. The severity of service conditions to which rails are subjected from heavier power and equipment, operating at increased speeds, requires that unusual care and supervision be exercised during the steel making, rolling and general manufacturing processes to insure material of the highest quality and safety. The need for specifications governing their quality and manufacture is axiomatic. Coincident with the specifications is the importance of properly designed rail sections to obtain stiffness and strength, together with the desired physical qualities which the rolling and composition of the material give.

The late Dr. P. H. Dudley, consulting engineer of the New York Central on rails, ties, and structural steel, was one of the world's recognized authorities on rails, and the designs which he developed after a large amount of track and mill investigations have since been adopted as standard for the entire system.

Specifications for basic open hearth steel rails were just as carefully worked out by Doctor Dudley and have stood the test of time, as they have been in force since 1909, but with slight changes or modifications, although supplemented more recently to cover conditions governing the acceptance of heavier section rails of increased length and to provide for the chemical requirements of special composition rails, a large tonnage of which has been purchased by the New York Central lines during the past three or four years at an extra price over standard. These special composition rails have a lower carbon coupled with higher manganese range, which produces rail steel of considerably higher physical properties and greater factor of safety, along with toughness and better wearing qualities. While not having pioneered in the use of "medium" or "intermediate" manganese steel rails, as this material is designated, the New York Central lines are the largest user of them, the aggregate purchases to date amounting to nearly one-quarter of a million tons.

The specifications which have been drawn up for the acceptance of all rails purchased are unusually complete, the various stages in the process of manufacture being quite fully covered, severe tests imposed, the chemical composition limits outlined, and close tolerances adhered to. Furthermore, information is included in the specifications pointing out service conditions which rails are called upon to meet, and their relationship to the quality of the material. This brings the picture before the various departments in the rail plants and aids in securing their full co-operation to help meet the problems of the rails in service.

Closely allied to the rail purchases are track fastenings, 75,000 tons of which are purchased yearly. A variety of material is covered under track fastenings or appurtenances, but the principal items are frogs and switches, splice bars, tie plates, bolts, spikes, rail anchors and a large amount of other miscellaneous materials. The designs and specifications relating to the principal track fastenings have been developed during years of effort as a part of the work of the New York Central Lines' Engineering Committee, an organization appointed by the president to develop, investigate, revise, improve and finally recommend engineering standards.

The Engineering Committee is comprised largely of the chief engineers of the New York Central lines and of the Rutland railroad, and other engineers and specialists are called upon for conference in the study of problems with which these representatives are directly concerned. A considerable part of the committee's assignments is handled through subcommittees, reporting their findings to the committee as a whole for consideration. Concurrently with the development of standards of either design or specifications, field studies are made of the practices on the various lines, and the experience of other roads or the work being conducted by national organizations, such as the American Railway Engineering Association. Co-operative studies are also carried on with various manufacturers, and their advice sought on questions of both design and specifications in many cases. The manufacturer is thus given added assurance that every effort will be made to see that the requirements conform to manufacturing conditions at the different plants as far as possible, thus avoiding controversy and insuring a better product.

Unanimous Approval Required

Changing conditions in service, or in manufacturing process, require consideration of revisions in standards, and, as the needs arise, further studies and investigations are made, both from the results of service and conditions at the plants of manufacture. The revisions are then unanimously approved before being recommended to supersede previous issues, and must further receive the approval of the president before becoming the new standard.

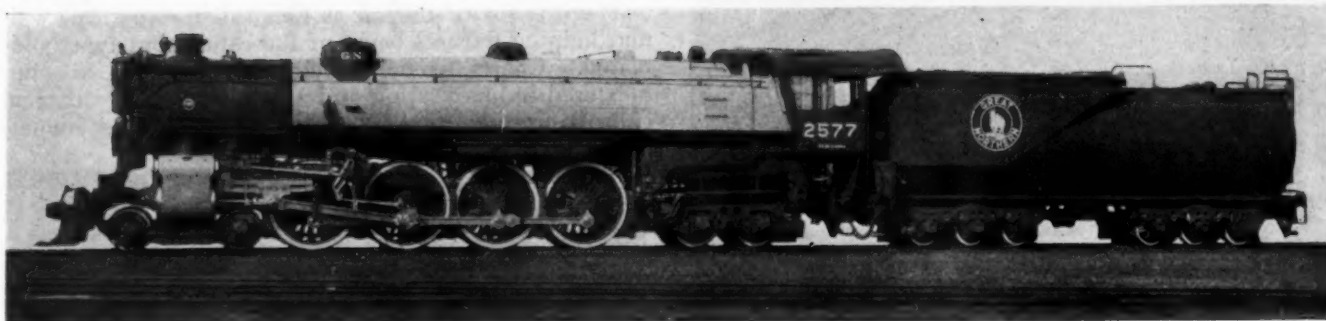
Practically all of the important steel materials used in large quantities for track construction and maintenance are now covered by complete specifications, and additions are being made to the list from time to time as the need arises.

(A second article, touching upon this road's inspection and research, will appear in a later issue.—EDITOR.)

* * *



Track Elevation and Grade Separation Near Chicago on the Grand Trunk Western



The Empire Builder (4-8-4) Type Locomotive Built for the Great Northern by The Baldwin Locomotive Works

4-8-4 Type Locomotives for Passenger Service

Great Northern purchases fourteen to meet traffic demands in summer months—Tractive force, 58,300 lb.

FOURTEEN 4-8-4 type locomotives, built by the Baldwin Locomotive Works, were recently placed in service by the Great Northern on its through passenger trains such as the Empire Builder and the Oriental Limited. These locomotives, which have been named by the road the "Empire Builder" type, will be used between Spokane, Wash., and Wenatchee, and also in the same service over the Montana division, between Williston, N. D., and Havre, Mont.

These locomotives have 80-in. driving wheels, 29-in. by 29-in. cylinders, and the boiler operates at a pressure of 225 lb. The maximum rated tractive force is 58,300 lb. The total weight of one of these locomotives is 420,900 lb., of which 247,300 lb. is carried on the drivers.

Special Equipment

These locomotives are equipped with type E superheaters, Sellers exhaust steam injectors, Barco power reverse gears, Commonwealth cast-steel cylinders, and American multiple type throttles.

A feature in the design of this locomotive is the engine truck. The truck frame is a steel casting designed with the truck bolster, side frames, truck-bolster center plate and outside journal-box pedestals cast integral. The two side frames are connected with each other, front and rear, so as to enclose the wheels. The front and back portions of the truck casting are braced at the center by means of a diaphragm connected to the truck bolster. The design is of the constant-resistance equalized type, the rockers setting in cavities cast in the top of the truck bolster.

Alemite lubrication is provided for the engine-truck rockers, center plate, pedestals, and other bearing parts. This type of lubrication has also been applied to the valve-motion bearings, shoes and wedges, spring rigging, brake gear and tender-truck center plates. The railroad company's standard grease cups have been applied at the rod connections. All the crank pins and axle fittings have been tapered slightly in order to avoid

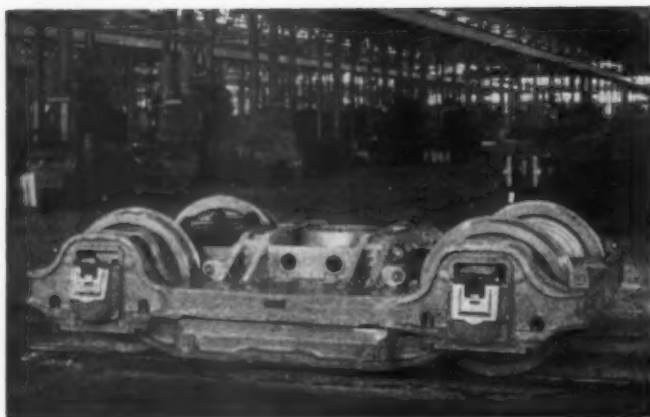
any abrasion which usually takes place with straight fits. The angularity of the taper is the same for all of these pin connections.

To reduce weight, the boilers which are of nickel-steel construction, are of conical design instead of Belpaire, which has heretofore been the standard of the

Table Showing the Principal Dimensions and Weights of the Great Northern Empire Builder (4-8-4) Type Locomotives

Railroad	Great Northern
Builder	Baldwin Locomotive Works
Service	Passenger
Rated maximum tractive force	58,300 lb.
Weight on drivers ÷ tractive force	4.24
Cylinders, diameter and stroke	29 in. by 29 in.
Valve gear, type	Walschaert
Weights in working order:	
On drivers	247,300 lb.
On front truck	78,000 lb.
On trailing truck	95,600 lb.
Total engine	420,900 lb.
Total tender	326,900 lb.
Total engine and tender	747,800 lb.
Wheel bases:	
Driving	20 ft. 9 in.
Rigid	13 ft. 10 in.
Total engine	47 ft. 9 in.
Total engine and tender	91 ft. 2 in.
Wheels, diameter outside tires:	
Driving	80 in.
Front truck	36 in.
Trailing truck	45 in.
Boiler:	
Steam pressure	225 lb.
Fuel, kind	Oil
Diameter, first ring, inside	84 in.
Firebox, length and width	138 in. by 102 in.
Tubes, number and diameter	38—2¼ in.
Flues, number and diameter	195—3½ in.
Length over tube sheets	22 ft.
Grate area	97.7 sq. ft.
Heating surfaces:	
Firebox and combustion chamber	379 sq. ft.
Tubes and flues	4,402 sq. ft.
Total evaporative	4,781 sq. ft.
Superheating	2,265 sq. ft.
Combined evap. and superheating	7,046 sq. ft.
Tender:	
Water capacity	17,000 gal.
Oil capacity	5,800 gal.

Great Northern. All of the auxiliaries with the exception of the two 8½-in. air compressors are operated with saturated steam. The air compressors are located on the front of the smokebox to facilitate making the connections to the superheater header.



Baldwin Four-Wheel Equalized Engine Truck

These locomotives present an attractive appearance. The covers of the cylinder and steam chest heads are chromium plated and the side rods are polished. The jackets of the boiler and the cylinders are finished with aluminum paint. The tender is carried on two six-wheel cast-steel trucks and has a capacity for 17,000 gal. of water and 5,800 gal. of oil. The tender frame is of Commonwealth cast-steel construction and the seams of the body of the tender are welded throughout.

New North Western Cafe-Observation Cars

THE Chicago & North Western recently placed in service two observation cars, notable for the provision of a dining compartment and kitchen, as well as the usual club facilities, including a soda fountain. These cars are now being used on "The Victory," the new fast train of the Chicago & North Western, operating between Chicago and St. Paul—Minneapolis, Minn. It was anticipated that passengers on this train would desire a light buffet service in the evening at the time of departure from the initial terminal, and would also want breakfast prior to arrival at the destination terminal. A car was, therefore, designed to be useful as a lounge car for reading, card playing and visiting on one end of the trip, and as a small diner with lounge features at the other end of the trip. The popularity of the car was immediate, and, in fact, the lounge space and diner space proved insufficient to meet the peak demands.

The car is divided into six sections, and includes, beginning at the front, an eight-seat lounge; a dining compartment with seating capacity for 13; a kitchen with soda fountain; a Pullman section and a general lounge equipped with radio and writing desk; an observation end, enclosed to provide a solarium.

The interior of the car is finished in American walnut, lighting fixtures being of the candelabra type gold-plated. Chairs in the general lounge room are upholstered in blue leather and a combination of different colored plush fabrics, with green and blue predominat-



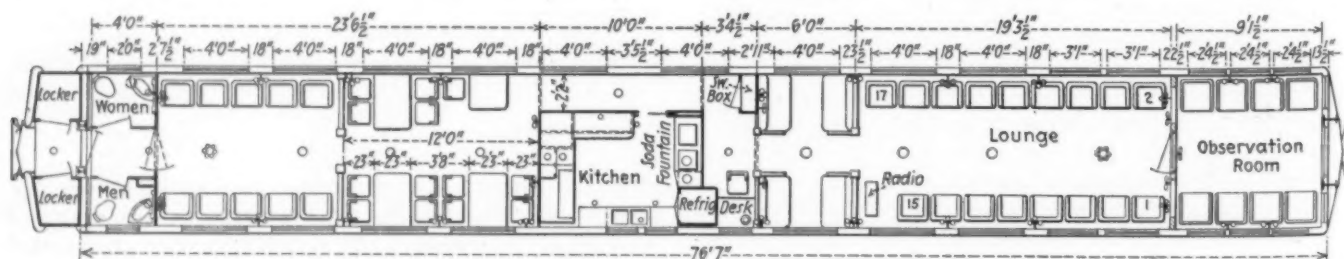
The General Lounge Portion of the New North Western Cafe-Observation Car

ing. The solarium is equipped with eight wicker chairs, upholstered in leather. Vita glass, used in the windows, is designed to offer the minimum resistance to passage



Dining and Club Facilities Combined in Cafe-Observation Car of "The Victory," New C. & N. W. Train Between Chicago and St. Paul—Minneapolis

of the health-giving, ultra-violet rays of the sun. This room is attractively finished in a combination of tan colors, from dark tan on the lower walls to cream color on the ceiling.



Chicago & North Western Observation Car with a Small Kitchen and Dining Room

Record Business on Union Pacific

Conservative capitalization turns 5 per cent return on investment into \$20.36 per share on common

THE Union Pacific System in 1929 had net income, after all charges, of \$49,256,042, exceeding the record net income of the preceding year by \$3,149,170. After the payment of dividends (\$3,981,724) on the preferred stock the remainder was equivalent to \$20.36 per share of common stock outstanding, as compared with \$18.95 per share earned in 1928. The

largely by the maturity of \$45,000,000 of Oregon Short Line bonds which was met without new financing. Stock outstanding at the end of the year totaled \$321,836,200, as compared with \$362,116,420 of funded debt. Total gross income in 1929 was 3.8 times fixed charges. The system's great financial strength, of course, lies in its large corporate surplus and not in any

Table I—Union Pacific, Operating Results, Selected Items

	Years 1921 to 1929								
	1921	1922	1923	1924	1925	1926	1927	1928	1929
Average mileage operated	8,205	9,406	9,483	9,510	9,548	9,647	9,676	9,813	9,869
Total operating revenues	\$181,445,913	\$192,877,122	\$211,318,465	\$199,035,118	\$198,039,901	\$205,416,264	\$203,891,622	\$215,169,245	\$217,356,593
Total operating expenses	131,601,749	143,846,229	152,249,080	141,611,098	138,842,480	140,769,540	146,334,442	146,256,488	147,026,561
Net operating revenues	49,844,164	49,030,892	59,069,385	57,424,020	59,197,421	64,646,723	63,557,180	68,912,757	70,330,031
Railway tax accruals	11,720,856	13,251,551	13,573,067	14,457,715	13,462,886	15,725,933	15,985,844	15,978,221	17,089,568
Railway operating income	38,084,985	35,766,067	45,474,535	42,936,623	45,719,298	48,906,839	47,554,261	52,924,888	53,226,510
Hire of equipment	Dr. 3,839,656	Dr. 1,560,815	Dr. 4,938,152	Dr. 4,274,781	Dr. 4,809,334	Dr. 6,028,220	6,954,515	7,965,912	6,974,464
Net railway operating income	33,856,449	33,496,318	39,660,246	37,913,161	40,038,645	42,100,143	39,483,390	43,818,995	45,325,568
Dividends on stock owned	4,725,372	7,888,049	9,473,676	8,122,395	8,725,895	8,893,880	10,276,593	11,369,984	11,597,524
Interest on bonds owned	7,564,737	6,156,427	6,008,541	6,433,990	6,103,127	5,909,971	6,195,669	6,430,397	6,496,949
Total other income	13,138,088	15,749,563	17,513,567	16,226,202	16,539,698	17,129,664	18,435,629	20,346,558	21,598,473
Gross income	47,364,255	49,245,880	57,173,812	54,139,363	56,578,343	59,229,807	57,919,019	64,165,553	66,924,041
Interest on funded debt	15,914,445	16,430,877	16,879,477	17,855,927	17,884,893	17,794,134	17,744,850	17,573,934	17,035,129
Total deductions	16,063,180	16,906,157	17,251,606	18,386,159	18,347,283	18,245,057	18,253,784	18,058,681	17,667,998
Net income	31,301,075	32,339,723	39,922,206	35,753,205	38,231,060	40,984,749	39,665,235	46,106,872	49,256,043
Preferred dividends (4%)	3,981,740	3,981,740	3,981,740	3,981,740	3,981,740	3,981,740	3,981,740	3,981,740	3,981,724
Common dividends—rate	10	10	10	10	10	10	10	10	10
Common dividends—amount	\$22,229,160	\$22,229,160	\$22,229,160	\$22,229,160	\$22,229,160	\$22,229,160	\$22,229,160	\$22,229,160	\$22,229,160
Earnings per share on common	\$12.29	\$12.75	\$16.16	\$14.29	\$15.40	\$16.64	\$16.05	\$18.95	\$20.36
Total revenue tons	23,255,922	27,171,043	30,820,137	31,503,788	32,770,901	34,534,148	34,785,587	35,717,820	36,250,018
Revenue ton-miles (thousands)	8,904,692	10,533,713	11,916,698	11,786,736	12,444,146	13,211,550	13,157,043	14,301,827	14,430,924
Rev. passenger-miles (thousands)	956,698	1,056,202	1,142,849	1,057,149	1,050,052	983,164	931,033	889,651	894,453
Revenue per ton per mile (cents)	1.451	1.315	1.285	1.233	1.188	1.178	1.181	1.168	1.172
Average haul	382.90	387.68	386.65	374.14	379.73	382.56	378.23	400.41	398.09
Operating ratio	72.53	74.58	72.05	71.15	70.11	68.53	68.83	67.97	67.64

NOTE:—Los Angeles & Salt Lake included beginning in 1922.

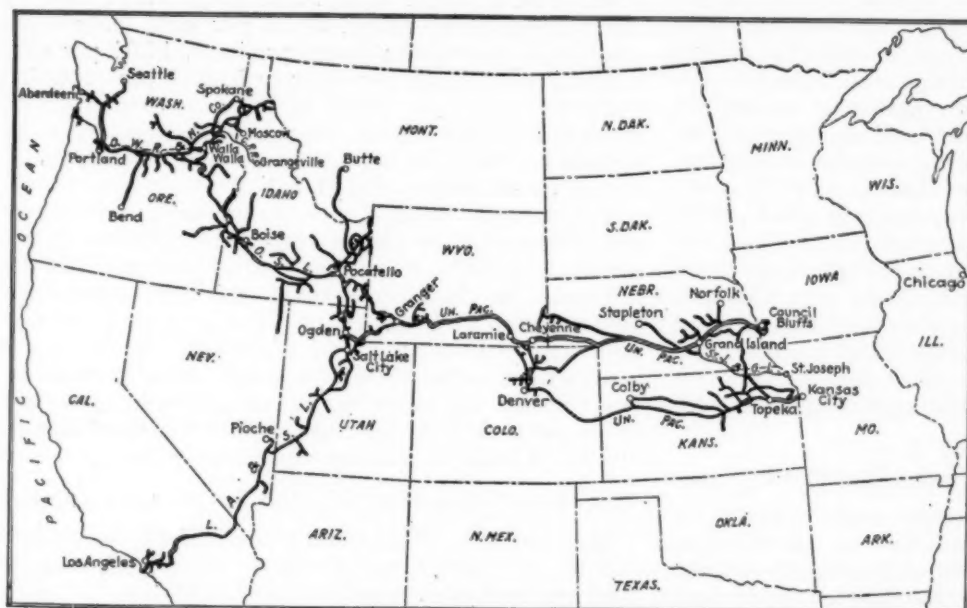
increase in corporate net income was attributable in almost equal proportions to an increase in net income from transportation operations and to an increase in returns earned on investments. Other important contributing factors were a reduction in hire of equipment expenses and fixed charges.

Funded debt decreased \$47,242,000—accounted for

abnormal return on its investment. As a matter of fact net railway operating income in 1929 was barely 5 per cent on the property investment. The corporate surplus, however, was \$330,590,046, or some eight millions in excess of outstanding stock, both common and preferred. Income on investments totaled \$21,598,472, or 43.8 per cent of gross income. In other words, earnings

which in previous years could legitimately have been distributed among the stockholders were instead reinvested in the property or used for the purchase of securities. The comparatively high earnings per share of stock, therefore, result because they include the earnings of undivided profits of previous years' operations; they reflect more than the capitalized investment for transportation purposes.

Operating revenues in 1929 were \$2,187,347 higher than in the preceding year. Freight revenue increased \$2,177,477, mail revenue \$551,753 and passenger revenue declined \$563,254. The increase in freight revenue arose from an increase of slightly less than one per



The Union Pacific

cent in net ton-miles, combined with a fractional increase in revenue per ton-mile due to a slight fluctuation in the classes of commodities handled. Heavier shipments were made of oranges, vegetables, petroleum oils, minerals, coal and manufactures. There were declines in grain, livestock and forest products.

The increase in mail revenues was due to an increase in the rate for this service. Retroactive payments, for years prior to 1929, however, were not included in this account but were credited to Profit and Loss. The decline in passenger revenues amounted to 2.1 per cent and was due to the chronic cause—automobile competition.

Operating expenses were \$770,073 higher than in 1928, the increase being largely ascribable to a rise in transportation expenses which was roughly proportionate to the increase in traffic and ascribable to added train-mileage and faster schedules. Maintenance of equipment expenses declined \$771,107, due primarily to a reduction in the retirement of old and obsolete equipment. Maintenance of way expenses were approximately the same as in 1928. Maintenance work in 1929 included the laying of 247 miles of new rail and 55 miles of second-hand rail, and the insertion in track of 2,404,096 new ties (98.2 per cent creosoted),

23 per cent lower than the former; but 1929 registered an increase over 1928. It is true that the slightly heavier business was, as noted above, accompanied by an actual slight decline in gross revenues due to a reduction in the average revenue per passenger-mile. It is none the less interesting, however, to see the railroad, at least temporarily, put an end to the steady decline in the volume of this class of business. If a similar tendency should show itself on a number of railroads and continue for a year or two, it would be an encouraging omen for the entire industry. It is perhaps worthy of note in this connection that the Union Pacific, through subsidiaries, is one of the large operators of highway motor coach service and that the increased volume of passenger business accompanied a rapid expansion of motor coach service in its territory. The company's highway operations now extend from Chicago and St. Louis to Los Angeles and Portland and with feeder lines total over 7,000 miles of highway and with a capital investment of \$3,000,000.

High Grade Traffic Leads

Freight traffic of the Union Pacific System in 1929 was divided as follows: Agricultural products, 27.32 per cent (wheat, 7.71 per cent; sugar beets, 5.41 per

Table II—Comparison of Selected Freight Operating Statistics

	Union Pacific				Oregon Short Line				Los Angeles & Salt Lake			
	1929	1928	Per cent of change		1929	1928	Per cent of change		1929	1928	Per cent of change	
			Inc.	Dec.			Inc.	Dec.			Inc.	Dec.
Mileage operated	3,765	3,732	0.9		2,539	2,539			1,209	1,200	0.8	
Gross ton-miles (thousands)	28,590,949	29,098,667		1.7	7,075,807	7,041,278	0.5		4,151,705	3,683,434	12.7	
Net ton-miles (thousands)	10,561,632	10,608,796		0.4	2,997,528	2,980,439	0.6		1,579,939	1,396,220	13.2	
Freight train-miles (thousands)	13,716	13,755		0.3	3,924	3,870	1.4		2,306	2,115	9.0	
Freight locomotive-miles (thousands)	14,818	14,816	0.01		4,429	4,558		2.8	2,954	2,581	14.5	
Freight car-miles (thousands)	752,013	771,948		2.6	177,062	176,550	0.3		108,636	98,010	10.8	
Freight train-hours	768,305	797,101		3.6	279,240	287,269		2.8	170,268	161,483	5.4	
Car-miles per day	66.1	66.3		0.3	38.5	36.3	6.1		45.6	43.6	4.6	
Net tons per loaded car	21.1	20.9	1.0		25.6	25.6			22.4	22.4		
Per cent loaded to total car-miles	66.5	65.9	0.9		66.1	66.1			64.8	63.5	2.0	
Net ton-miles per car day	928	911	1.9		652	614	6.2		664	621	6.9	
Freight cars per train	55.8	57.0		2.1	46.0	46.5		1.1	48.3	47.6	1.5	
Gross tons per train	2,084	2,115		1.5	1,803	1,819		0.9	1,801	1,742	3.4	
Net tons per train	770	771		0.1	764	770		0.8	685	660	3.8	
Train speed, miles per train hr.	17.9	17.3	3.5		14.1	13.5	4.5		13.5	13.1	3.1	
Gross ton-miles per train-hour	37,213	36,506	1.9		25,340	24,511	3.4		24,383	22,810	6.9	
Net ton-miles per train-hour	13,747	13,309	3.3		10,735	10,375	3.5		9,279	8,646	7.3	
Lb. coal per 1,000 gross ton-miles	109	108	0.9		118	116	1.7		141	139	1.4	
Loco. miles per loco. day	89.5	86.5	3.5		64.3	64.9		0.9	67.3	55.7	20.8	
Per cent freight locos. unserviceable	10.3	10.2	1.0		4.0	11.2		64.3	5.5	6.6	16.7	
Per cent freight cars unserviceable	7.9	9.8		19.4	4.6	4.0	15.0		2.3	3.2	28.1	

1,295,355 tie plates and 95,671 continuous rail joints. Rail renewal represented 2.9 per cent of main line track and tie renewal 6.2 per cent of main line track-miles. An increase of \$442,746 in general expenses was due principally to an increase in pension payments and valuation expenses. Car hire declined almost one million dollars by reason of a decrease in the mileage of refrigerator cars. Locomotive repairs in 1929 averaged 24.48 cents per locomotive-mile; in 1928, 25.12 cents. Passenger car repairs averaged \$1,774 per car as compared with \$1,695 per car in the preceding year. The average cost of freight car repairs was \$203 per car; in 1928, \$208. The ratio of maintenance of way expenses to operating revenues was 12.99 per cent; the maintenance of equipment ratio, 17.61 per cent; and the transportation ratio, 28.82. The operating ratio was 67.64.

Passenger Traffic Volume Increased

Comparative figures of revenues and expenses for the years 1921-29 are given in Table I. Outstanding among these comparisons is that of passengers carried one mile. It will be noted that this figure declined each year from 1923 to 1928, the latter year showing a total

cent; corn, 2.21 per cent; animal products, 4.36 per cent; products of mines, 30.22 per cent (bituminous coal, 16.74 per cent); forest products, 14.64 per cent; manufactures, 21.29 per cent; l.c.l., 2.17 per cent. The comparatively light traffic in mine products and the emphasis on the higher classes of freight show the necessity for the high class of service reflected in the Union Pacific's operating statistics.

Comparative freight service operating statistics of the three major companies of the Union Pacific System are given in Table II for the years 1929 and 1928. The difference in character between the three railroads is well reflected in these figures. The long haul and comparatively favorable grade conditions of the parent railroad are reflected in its average miles per car-day, 66.1; its net ton-miles per car-day, 928; its gross ton-miles per train-hour, 37,213; and its fuel performance, 109 lb. of coal per thousand gross ton-miles.

Eleven and One-Half Million Investment Increase

The system in 1929 spent a total of \$15,860,212 for capital improvements, of which \$8,087,598 was for roadway and structures and \$7,673,796 was for equip-

(Continued on page 977)

Inland Waterways Will Shorten Length of Rail Haul

*The development of inland waterways will tend to
reduce main line movement to market
for much branch line traffic*

By C. A. Morse

Retired Chief Engineer, Chicago, Rock Island
& Pacific, Chicago

SINCE the development of railway transportation began, little has been done to improve the inland waterways, but what has been done has had for its object imaginary competition with the railroads and an effort by this means to secure a reduction in railroad freight rates. With the passage of the Transportation Act in 1920, it was thought that the unfair methods that had been employed to force down railroad freight rates in this way were to cease, and that the rates would be so maintained as to give to the railroads the "fair return" which the Interstate Commerce Commission was called upon by this Act to fix.

It may be advisable to improve our inland waterways so as to provide transportation for certain commodities that can be handled more cheaply in this way than by the railroads or motor trucks. But while planning for this development of inland waterways, the subject should be given as careful study as to its economics as would be given by an independent corporation if it were considering the expenditure of money of its stockholders. Unfortunately, governmental expenditures are seldom given this consideration.

The taxpayers of the country are the stockholders of a government, and both the taxpayers and the general public are the ratepayers. This being the case, a program of the scope of the proposed improvement of our inland waterways should be studied carefully from all angles. The general public and public officers, as a rule, have only a very general idea of such matters and they may be favorably impressed with some proposition, from the angle that has been presented to them, whereas if they were made familiar with other phases of the proposition they might find that these other considerations so far outweigh the one that had first appealed to them that, in the end, it would not be a wise or desirable project to undertake.

A Typical Mid-Western Area

It is generally felt that the railways are not in favor of the development of inland waterways. The public immediately attributes this opposition to selfishness and discounts it 100 per cent, without even looking into the matter. It is for this reason that the writer proposes to direct attention to one effect of such waterway development on a large agricultural territory, which, because of the information which has been given it, is generally favorable to inland waterway development.

The territory referred to is Iowa and northern Missouri, with small areas in Minnesota and South Dakota, a country that is bounded on the east by the Missis-

sippi river and on the south and west by the Missouri river, and which is one of the most productive agricultural sections in the United States. With the development of these two rivers for barge lines, there will be only a short haul over the railroads from any point in this area to one of the rivers. Therefore, the distance which these products will move over the railroads will be only a small part of the total distance which the products will be transported.

It is not unnatural that the people in that territory, not being familiar with the elements that go to make up the cost of railroad transportation, should on first thought feel that the present rates from their shipping point to the nearest river port would be what they would have to pay if they shipped their products to this point and then reshipped them by the barge line to some other point. The fact is, however, that practically no branch line of a railroad into an agricultural territory earns its expenses of operation on the branch line proper. Rather the railroad's profit comes from the hauling over the main line of the business from many of these branch lines, which are referred to as feeders, the total of which traffic, with the business originating along the main line, gives a volume which enables the cost of handling to be brought down to a figure which will not only meet the operating expense on the main line, but more than offset the deficit on the industrial feeder lines as well.

The cost of transportation on a railroad varies with the density of traffic. If the traffic on an engine district comes to that district in such volume and regularity that full tonnage trains can always be run, it makes an ideal condition and the cost of handling is at a minimum. As a road approaches an important market like Chicago, as for illustration, the railroads that extend west of that metropolis, it shows a steady increase in traffic density and the cost of handling this traffic, due partly to reduced overhead expenses per ton mile, declines to a much lower figure than on an engine district with lighter traffic density.

Branch Line Earnings

The failure of branch line feeders to earn enough to cover the expense of operating the branch lines themselves, and the increased earnings of the main lines by reason of the branch line traffic, are well illustrated by a statement that was worked up in 1926 for another purpose on the Chicago, Rock Island & Pacific. This statement is based on the average business and expenses for the years 1923, 1924 and 1925, on 20 branch

lines, with a total mileage of 834.16, or over one-tenth of the operated mileage of the Rock Island. These lines are located principally in Iowa and northern Missouri with a few in southwest Minnesota and southeast South Dakota. The average total annual operating revenues from all traffic handled to and from these branches for the three years mentioned were \$6,156,543, while the total operating expenses on the branches themselves were \$2,622,474, leaving net earnings at the junctions of \$3,534,069. The proportion of the total operating revenues accruing to the branch lines down to the junctions with the main line were \$1,546,489, over one million dollars less than expenses, while the earnings credited to the main line from the traffic originating on the branches, and going to the branches was \$1,987,580.

The average transportation ratio for the system during these three years was 40 per cent. If we add to this 5 per cent for additional maintenance of way and structures and maintenance of equipment by reason of the traffic to and from these branches, the charge against the main line earnings coming from or going to the branches would be increased to 45 per cent, which would lead to a deduction of \$894,411 from the net earnings at the junction points. If the taxes on the branches, which are not included in their operating expenses, are also deducted, they lead to a further reduction of \$339,906—and leave the net earnings due to business originating on or going to these branches as \$1,299,752 per year. (In contrast, $5\frac{3}{4}$ per cent on the federal valuation of the 20 branches is \$1,113,762.)

These branches all lie between the Mississippi river on the east and the Missouri river on the south and west and if these rivers should be improved so as to admit of barge service, a large portion of the traffic that originates on these branch lines, such as grain and hay, would, if the water rates were low enough, naturally be shipped on the railroad only to the nearest river port and the railroad would lose the main-line haul on these products to Chicago, which is about 200 miles east of the Mississippi river.

As an illustration of an extreme case, the Montezuma branch connects with the main line at Muscatine, Ia., a town on the bank of the Mississippi river and a natural barge line port. If all the business, originating on this branch or going to this branch was taken to or from Muscatine by river barges, the rates on this branch would have to be increased 2.72 times to enable it to earn operating expenses and taxes, and a return on the federal valuation of that branch of only 0.5 per cent. The present carload rate on corn from Montezuma to Muscatine is 11 cents per 100 lb.; this multiplied by 2.72, would be 29.92 cents per 100 lb. In contrast, the present all-rail rate on corn from Montezuma to Chicago is but $17\frac{1}{2}$ cents per hundred. Again, the rate on hogs is now 16 cents per 100 lb. and it would have to be increased to 43.52 cents to give this railroad the same return that it now receives, whereas the all-rail rate to Chicago is but $32\frac{1}{2}$ cents. No one imagines that all of the business originating on the branch or going to it would be delivered or taken by the barge line, but the effect or rates would be in proportion to the amount of business still handled.

It is a well-established fact that a branch line from which a road does not secure 250 or 300 miles of main line haul is not an asset but a liability and that the longer the main line haul is for business from a branch line, the more valuable that branch line becomes. On the other hand, many branch lines have been abandoned in the past for the reason that the forced reduction in

freight rates made them too costly to operate. It will be seen from this illustration that, with the development of our inland waterways, one of two things must take place; either there must be an increase in freight rates on branch lines whose main line haul will be cut off by the use of barge lines, or the railroads must be permitted to abandon those branch lines that are made unprofitable by water transportation.

Main Line Earnings Reduced

There is, however, another evil that follows the carrying out of either of these plans and that is the fact that without the feeder branches the traffic on the main lines of our railroads is going to be reduced to the point that they cannot operate as economically as they do at present. Since even now few of the larger railroads, especially in the west, are earning what the Interstate Commerce Commission has declared to be a fair return, it is evident that with the loss of much of the branch line traffic, it is going to be necessary to increase the rates for the main line traffic, to permit them to earn somewhere near what has been decided to constitute a fair return.

It is seen, therefore, that there are many angles to be considered in connection with the development of our inland waterways and that if they are carefully studied, it is questionable whether, when the effect on business and on the living expenses of the public as a whole are taken into consideration, it may not be a mistake to spend the public money on projects of this kind.

Our railroads have done a great work during the last ten years in reducing their costs of operation and there is still opportunity for much more improvement in the way of reductions in ruling grades and betterment in alinement, but such work must stop because of loss of traffic, if the inland waterways ever develop to the point where they handle any appreciable amount of business.

It may be of interest to note that the revenues that the 20 branch lines mentioned earned on their own territories averaged 21.93 per cent of the total revenue, earned by the railroad from the business originating on or going to the branch lines. The highest per cent was on the longest branch on the list, which branch was 117.6 miles long and earned 44.2 per cent of the revenue derived from the business to and from that branch. The lowest per cent was from the shortest branch on the list, 5.8 miles long, which earned 9.7 per cent of the revenue from business to and from that branch.

This example is on the Rock Island, but the Chicago, Burlington & Quincy and the Chicago & North Western, which together with the Rock Island were the pioneer railroads in this territory, and whose building of branch lines helped to develop this area in its early settlement, can no doubt show similar conditions as to branch line business. Later, the Chicago, Milwaukee, St. Paul & Pacific, the Illinois Central and the Chicago Great Western came into this territory and have built or acquired many branch lines. With the improvement of the navigation on the Missouri river, there are areas in Kansas and Nebraska that would be similarly affected, and both the Rock Island and the Burlington would again suffer, while in addition to these railroads the Atchison, Topeka & Santa Fe would also be seriously affected. These three railroads have large branch line mileages in these states and they get the benefit of a main-line haul of about 500 miles for business to and from these branches, especially grain, hogs and cattle.

The above outlines the results that are liable to occur if business is diverted to the barge lines. On the other hand this is an era of speed in transportation and much has been said and written about the great saving that has accrued to the public during the past eight years by reason of the railroads speeding up their service. This being the case, there is a question whether any large amount of traffic will actually be diverted from the railroads by the improvement of inland waterways.

Aim is Rate Reduction

The fact is that the movement for waterway development is largely sentimental, but back of this sentiment is the hope that the fear of this cheap competition will make the railroads reduce their present rates, this in the face of the fact that the railroads west of Chicago have never, since the Transportation Act was passed, earned the amount fixed by the Interstate Commerce Commission as a fair return, and in most of the years since 1920 they have earned less than two-thirds of that return.

There has been some agitation of late on the question of the Interstate Commerce Commission requiring the railroads to make joint rates with the barge lines. The writer's object in this article is to call attention to the fact that a joint rate that will be fair to the railroads cannot be made that will not require an increase in rates over the branch lines to offset the decreases that the roads will suffer from the loss of main line haul on the business originating on these branch lines. He also calls attention to the fact that any traffic that is diverted from the main lines also reduces the density of traffic on these lines and, therefore, increases the cost of handling all main line freight business. Any joint rate that does not give the railroad sufficient revenues to cover operating expenses and a profit equal to at least five per cent on the value of the facilities used should be objected to by the railroads and, if ordered by the Commission, carried up to the Supreme Court as confiscation of property.

THE ILLINOIS CENTRAL has appointed Dr. James H. Hutton consulting endocrinologist to supervise the treatment of ductless gland disorders among employees. This is probably the first appointment of an endocrinologist in the industrial field.

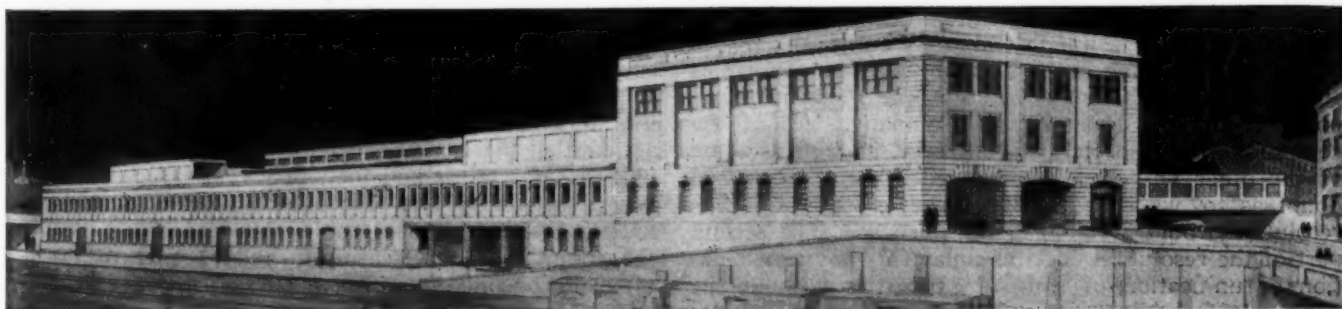
ITALIAN COLONIAL RAILWAYS in Lybia, Eritrea and Somalia will be developed and extended by a private company, under the terms of a concession recently granted by the Italian government. Department of Commerce reports indicate that the new company will develop existing lines and build new links to serve the three African colonies. Present railway mileage in Lybia is 270 kilometers (168 miles); in Eritrea, 310 kilometers, and in Somalia, 30 kilometers.

North Western Plans New Chicago Express Terminal

COMPLETE plans for a new express terminal to be built by the Chicago & North Western on its Galena division at Chicago, at a cost of \$3,125,000, have recently been announced by that railroad. The terminal will cover an area of 3.3 acres in the vicinity of the intersection of Milwaukee avenue and Halsted street and, when completed, will be exceeded in size in the United States only by the Sunnyside station at Brooklyn, N. Y. The entire building is to be used by the Railway Express Agency, which plans to discontinue two or three of its scattered stations in Chicago and to embody them in this station. The project as originally announced late in March, provided for the construction of only a part of the station in 1930, at a cost of about \$1,400,000, but Fred W. Sargent, president of the North Western, stated that in view of the present unemployment situation throughout the country it has been decided to undertake the construction of the entire facilities this year.

The new terminal will occupy a site just outside the main passenger terminal of the North Western at Madison street and when in operation will save at least an hour in the delivery of inbound shipments and will allow shippers that much extra time in the collection of outbound shipments. It is also expected to obviate delays to passenger service at Madison street during periods of peak traffic. The terminal will be used as an exchange station by the Railway Express Agency as well as for express routed via the North Western.

The building will be three stories high, 680 ft. long and 235 ft. wide, and a fourth story at one end will house the offices. It will contain a total floor area of 260,000 sq. ft., will have 90,000 sq. ft. of loading platforms and will be served by 9,900 ft. of trackage. The first floor will be used for the housing of empty vehicles, which are to be used in the handling of the express, and which will number between 200 and 220. The second floor is to be on a level with Milwaukee avenue and Halsted street, which are both elevated in this vicinity, and will have a large loading platform in the center and a wide driveway on all sides. This floor will be used exclusively for sorting shipments before loading or delivery. The third floor will be used principally for the transfer of express to and from the cars spotted at the outside platform. Ramps at the entrances will make it possible for trucks to run to the third floor under their own power. A refrigeration plant, ice-crushing equipment and a warm room for perishables will be installed in the building. Concrete and steel will be used in the construction and the exterior walls will be of brick trimmed with building stone. Construction is to be started immediately.



Perspective View of the Express Terminal Which the North Western Plans to Construct at Chicago

Hearings on Couzens Resolution

*Proposal to stop all railway unifications
arouses much controversy*

By Harold F. Lane

Washington Editor, *Railway Age*

WASHINGTON, D. C.

THE hearing before the Senate committee on interstate commerce on the Couzens resolution to stop all railway unifications until Congress has enacted further legislation on the subject has brought out so many objections that members of the committee, since the first hour, have devoted much of the time to discussing its modification. The suggested changes have ranged all the way from exempting short lines to the substitution of a simple Senate resolution requesting the commission not to allow the Great Northern and Northern Pacific to merge. The Couzens proposal is a joint resolution which would have all the force of law if also passed by the House and signed by the President. Some of those who have been sitting on the side-lines, however, have ventured the prediction that the only result will be the possible effect of the agitation on the commission or some of the commissioners, because even if a modified resolution should be reported by the committee and passed by the Senate, it is regarded as most doubtful if the House would act on it.

Although Senator Couzens, chairman of the committee, announced at first that he expected to conclude the hearings in two days, April 15 and 16, the number of witnesses who appeared was such that they were continued on April 17, 18 and 21.

Senator Hawes, of Missouri, who has vigorously opposed the resolution from the start, insisted that members of the Interstate Commerce Commission be heard, and after the committee had heard Commissioner Eastman as chairman of its legislative committee, and then Commissioner McManamy as chairman, he observed that both had dissented from the report in the Great Northern Pacific case, besides being opposed to certain features of the consolidation plan, and it was then decided to hear Commissioners Brainerd and Porter, who had favored the Northern lines unification.

I. C. C. Wants Authority Over "Virtual Unifications"

Chairman McManamy supported the resolution in its entirety, but the other ten commissioners opposed the proposal to suspend their authority over unifications, although they all favored legislation to prohibit "unsupervised forms of virtual unification," referring to Commissioner Eastman's testimony before the House committee regarding acquisitions by holding companies such as the Alleghany Corporation, the Pennroad Corporation and the Pennsylvania Company. All of the commissioners who testified, however, as well as some of the other witnesses who preceded them, expressed doubt as to whether the language of the Couzens resolution would accomplish the purpose. The second part of the resolution declares unlawful "any consolidation or unification of railroad properties without the approval of the commission," and although it includes in parentheses the words "whether directly by con-

solidation, merger, lease, purchase or acquisition of control, or indirectly through the device of a holding company, or in any other manner," its language does not specifically prohibit acquisitions which do not amount to consolidation or unification. When witnesses expressed doubt as to the effectiveness of this language Senator Couzens several times declared that it was the purpose to stop such activities and appeared puzzled as to why they expressed such doubt, but he has often made statements indicating that he considers that acquisition of control or even of a substantial percentage of stock by allied interests amounts to "virtual unification."

Proposed Amendments

Commissioners Eastman and McManamy have also used similar expressions, although both indicated an opinion that the resolution should be made more specific, and the entire commission joined in a suggestion that it might be well to change the words "consolidation or unification of railroad properties" to read "consolidation or unification or common control through stock ownership of carriers by railroad engaged in interstate commerce or the properties thereof." They also suggested, in addition to the remedy by injunction proposed in the resolution, that it might be desired to provide for personal penalties. Mr. Eastman suggested that the first part of the resolution might be amended so as not to suspend the commission's power in all cases, but perhaps only as to parallel and competing lines, or if the committee desired, only as to the Great Northern Pacific. He later sent in a suggestion that the situation might be met by suspending the effect of the provision of the transportation act which lifts the prohibitions of the anti-trust laws as to unifications approved by the commission. This would enable it to authorize any unification not contrary to the Sherman or Clayton law, and the Clayton law includes an exemption as to short feeder lines or extensions. His suggestion apparently appealed to some members of the committee.

If it be desired to limit the suspension of authority to cases where a restraint of competition would be involved, he suggested that the following limiting clause be inserted, following the suspension clause: "Where the commission has reason to believe that except for such approval and authorization said consolidation or acquisition of control would be in violation of any of the 'anti-trust laws,' as designated in section 1 of the act entitled 'An act to supplement existing laws against unlawful restraints and monopolies, and for other purposes,' approved Oct. 15, 1914." He also said following limiting clause could be inserted: "Where the commission has reason to believe that the result of such consolidation or acquisition of control would be to deprive certain railroad employees of employment."

Commissioner Eastman also suggested this additional proviso:

"And be it further resolved, that any consolidation or unification or common control of carriers by railroad engaged in interstate commerce, or the properties thereof, however accomplished, whether directly or indirectly, through a holding company or holding companies, by a voting trust, or in any other manner whatsoever, and which the commission is not empowered to approve and authorize, is hereby declared unlawful and may be enjoined by any court of competent jurisdiction at the suit of the United States, the commission, any commission or regulating body of any state or states affected, or any party in interest, and any person who hereafter knowingly participates in bringing about any such consolidation or unification or common control, so declared to be unlawful, shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not more than \$5,000 or by imprisonment for not more than three years, or by both such fine and imprisonment."

Short Lines Fear Loss of Opportunity to Sell

The resolution was vigorously opposed by representatives of the short lines and the commissioners agreed with them that it would deprive the short lines of a market for their properties and that in some cases the results might be serious. Most of the members of the committee appeared willing to exempt short lines but some did not quite get the idea that a stoppage of unifications generally would have such a serious effect on the short lines, and Senator Couzens asked if it was the committee's function to make a market for them. Chairman McManamy said he saw no harm in exempting them but he remarked that he had not noticed that the market for short lines has been very good anyway and that he did not think they would lose much.

Passage of the resolution was advocated by representatives of the 21 railway labor organizations and also by members of Congress and state commissioners of the northwestern states who are particularly opposed to the Great Northern Pacific unification. The only representatives of the big roads to testify were S. T. Bledsoe, general counsel of the Atchison, Topeka & Santa Fe, who asked that the present exemption of feeder lines and extension in the Clayton law be not suspended, and Daniel Willard, president of the Baltimore & Ohio.

Correction

In the report of the first part of the hearing, in last week's issue, by a transposition of words, Mr. Willard was erroneously named with those who advocated the passage of the resolution, although the subsequent report of his testimony showed that he offered objections to the suspension of the commission's authority. Many representatives of roads which have extensive unification plans were present during some of the sessions but took no part.

Northern Lines Unification Still Uncertain

Although no mention of it was made before the Senate committee some of the Representatives from the northwestern states who are opposing the proposed Great Northern Pacific unification met with Ralph Budd, president of the Great Northern, and Charles Donnelly, president of the Northern Pacific, and were told that there are still many obstacles to such a unification. The railway officers explained, it is reported, that the two roads would not assent to the commis-

sion's requirement that they give up the Burlington unless assured that they could at least retain an entrance to Chicago over it, and that a supplemental application would have to be submitted to and approved by the commission covering the other conditions imposed by the commission, which would undoubtedly require further proceedings. They also showed that the difficulties incident to a release of the Burlington stock from the mortgages of the two roads and to its disposition have not yet been ironed out.

Walker D. Hines, counsel for the stockholders of the two roads, attended the Senate committee hearing on April 21 and asked for an opportunity to be heard. Senator Couzens rather brusquely replied that the committee would have to decide whether additional witnesses would be heard, saying that it was rather late to make the request. Mr. Hines said that as the hearings had developed the proposed unification had become an important issue and that there had been a great deal of misunderstanding of the matter. At the outset some members of the committee thought that the commission had already authorized the Great Northern Pacific unification. Commissioner Eastman made it clear that no order had been issued but that the commission had held the record open for the submission and approval of a supplemental plan complying with the four conditions imposed, as to divorce of the Burlington, acquisition of connecting short lines, common use of terminals, and extension of the use of the tracks of the Spokane, Portland & Seattle to the Chicago, Milwaukee, St. Paul & Pacific. This led later to a discussion as to whether the commission would have to hold further hearings on the supplemental plan, before issuing an order, and whether the railway employees would have an opportunity to intervene, or whether the status is such that the commission might simply approve the supplemental plan without further hearing. Commissioners Brainerd and Porter took the position that the language of the commission's report amounted to a counter proposition to the railroads, and contemplated further hearings at which labor could undoubtedly be given an opportunity to be heard, but Commissioner McManamy insisted that there is nothing in the report either to require a further hearing or to prevent one.

Senator Hawes saw only harm in the resolution, saying that it would stop good consolidations as well as bad, that there appeared no satisfactory way of exempting short lines, that there was no assurance that Congress would pass new legislation in a reasonable time, and that "the resolution says nothing to stop holding companies so long as they do not consolidate." He said that if the existing law is not adequate it should be amended rather than suspended and that he proposed to introduce a bill to protect the interests of the employees.

When he asked Mr. Eastman if it would not be better to change the law than to suspend it he replied that he should say so unless Congress were of the opinion that an irreparable injury might result before the law could be changed.

Bill to Protect Labor

On April 18 Senator Hawes introduced S. 4205, to amend the interstate commerce act to provide that no "consolidation" shall be approved by the commission unless the carriers involved shall agree (1) that no employee employed by any such carrier at the time of the approval of the consolidation shall be dismissed directly or indirectly as a result of such consolidation, (2) that in case of the transfer from one place to an-

other of any employees of any such carrier as a result of such consolidation, the expenses incident to the transfer of such employees and their families shall be paid by the carriers, and (3) that any employee so transferred shall be reimbursed by the carrier for any losses sustained by him upon the disposition of his home or other real property by reason of such transfer.

Senator Hawes tried to make a point of the fact that the House committee, which is conducting an investigation of holding companies, has not urged any suspension of the commission's powers. When Senator Couzens said he had asked the House committee to undertake the investigation Senator Hawes said that he knew that Chairman Parker and Representative Rayburn, ranking minority member of the House committee, are opposed to the resolution.

Following the testimony reported in last week's issue, O. P. B. Jacobson, chairman, and D. F. Jurgenson, engineer, of the Minnesota Railroad & Warehouse Commission, appeared in behalf of the resolution for the purpose of preventing the Great Northern Pacific unification and a number of representatives of individual short lines showed how the adoption of the resolution would put a stop to plans now under way by which they expected to be acquired by larger systems.

On April 17 President B. M. Robinson of the American Short Line Railroad Association described the general short line situation, saying that the Chesapeake & Ohio and Baltimore & Ohio have agreed to take over in connection with their unification plans if they are approved by the commission all short lines connecting only with their lines and those which also connect with other lines which the commission shall allocate to them. This, he said, would reduce the membership of the association by about 60. He said the association recognized that some short lines have served their purpose and should be abandoned, but that the commission should have the power to decide which lines should be abandoned, and that many roads which have been unsuccessful independently may become successful as part of a system.

F. J. Lisman, of New York, who said he had cooperated in the building of short lines in half the states of the country, and is now a member of several reorganization committees, said he could enumerate approximately a thousand miles of short lines that would have to be abandoned if the resolution should be passed, including many involved in cases now pending before the commission. He said that under the present policy of the commission the big roads desiring authority to acquire others may be required to "take the bitter with the sweet," but that if they are not allowed to work out their own plans there is no way to induce them to absorb short lines they do not want. He said he was wholly in sympathy with the purpose of the resolution to stop the activities of holding companies but that it is not necessary to suspend the constructive policy adopted by the transportation act. He also said that the interests of the employees should be protected in case of consolidations but that he had no doubt that the railroads would be willing to do the fair thing.

Senator Brookhart read into the record a telegram from Charles Webster, chairman of the Iowa railroad commission, expressing support of the resolution and opposition to the unification of the Great Northern and Northern Pacific. Senator Couzens also read a telegram from representatives of the four train service brotherhoods on the Reading protesting against any

consolidation of the Reading with the Baltimore & Ohio.

Railway Labor In Favor of Resolution

A statement by Donald R. Richberg as counsel for the Railway Labor Executives Association, representing the heads of 21 railway labor organizations, was read by W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, urging prompt passage of the resolution to prevent further unifications until Congress can enact further legislation to protect the interest of the public and the railway employees. The statement referred to the commission's plan as of "dubious value" and said that its publication has been followed by "a notable rising of public opposition to railroad consolidations in the last four months." The "demoralizing effect" of extensive railroad consolidations, he said "should be sufficiently evidenced by testimony as to the imminent effects of the proposed Great Northern-Northern Pacific consolidation," and he included references to the separate opinions of Commissioners McManamy and Eastman criticizing the commission's plan as to these two roads. Mr. Doak said that if the effects of the consolidation plan are to be judged by what the commission has done in the Great Northern Pacific case they will be exactly opposite to what was contemplated as a result of the law. No one imagined, he said, that great competing lines would be combined and the employees had hoped that when the commission issued its plan it would be one in the public interest, but they were so amazed at the effect this would have on the employees that they had discussed court action to prevent it before the Couzens resolution was introduced. They are now supporting the resolution on the ground that it will prevent the merger of the two northern lines and also others until Congress can further consider the subject.

Mr. Doak referred to the reduction of 193,000 in the number of railway employees since 1923, saying there had been an increase in the freight handled in that time, and expressed concern that the tendency toward getting more work done with less labor on railways and in other industries may lead to serious consequences unless something is done to mitigate the effects. F. H. Wilson, representing the Order of Railway Conductors, and C. W. Barlow, representing the Brotherhood of Railroad Trainmen on the Northern Pacific, told the committee that 1500 employees would be displaced by the unification.

Views of the Commission

Commissioner Eastman appeared on April 18 at the request of the committee and read a letter addressed to the House committee on interstate and foreign commerce which, following its usual practice of requesting the views of the commission on bills affecting it, had asked for a report on the resolution similar to the Couzens resolution introduced in the House by Representative Knutson, of Minnesota. The letter said in part:

"It will be seen that under the existing law such consolidations and unifications as the commission may authorize can only be authorized after the commission has found that they will be in the public interest, and that it may attach to its grant of authority such terms and conditions as it conceives to be necessary. Under these circumstances, an expression of opinion by the commission that there is need for the suspension of its authority as to these matters would amount to an expression of opinion that it doubts its own ability to

determine wisely, on a record made in public hearing after due notice, what is in the public interest and to act accordingly.

"Difference of opinion among the members of the commission as to what the public interest requires in the case of particular unifications have, of course, arisen. A notable case in point, recently decided, is *Great Northern Pac. Ry. Co. Acquisition*, 162 I.C.C. 37. Divergent views were therein expressed and are adhered to. They need not be repeated here.

"It should also be stated that many of the unifications which have been approved by the commission were unifications to which no one objected, on the ground of public interest or on any other ground. Often they were unifications of small carriers with larger systems. This may be illustrated by the list of authorizations during the year ended October 31, 1929, as published in our last annual report to Congress, at page 311. It will be noted that of the 44 acquisitions of control there enumerated, 31 involved properties of less than 100 miles each.

"The suspension for a time of all power to unify would to some extent make it necessary to continue uneconomical expenditures which could be eliminated by unification. It is possible that in some particular case the results might be serious. It would deprive the short lines of a market for their properties.

"There are, however, means of bringing carriers by railroad under common control without supervision by the commission under existing law, or authority from it. Such methods were explained to your committee by a representative of this commission at recent hearings in the holding company investigation which you are conducting. The commission favors legislation which will prohibit such unsupervised forms of virtual unification."

Senator Couzens asked if it would not be possible for Congress to provide a better definition of what is in the public interest. "If Congress can lay down a rule, instead of leaving it to the discretion of the commission," replied Commissioner Eastman. Senator Couzens said the commission is divided in some cases as to what is in the public interest and that it seemed to him that sufficient consideration had not been given to the protection of the employees. Mr. Eastman said that he did not recall that labor had appeared in opposition to any unification before the commission except one involving terminal operations in Los Angeles, and that the term public interest is broad enough to include all parties. He said that some carriers have contended the commission has not power to attach certain conditions to its orders but that they have been accepted so far without legislation.

Senator Couzens asked if the commission would consider it in the public interest if a consolidation should require less men. Certainly anything that enables a railroad to operate more efficiently would be in the public interest, Mr. Eastman replied, and practically all economies involve less labor, but it might be desirable to attach certain conditions to the effect that the reduction shall be accomplished gradually. He referred to the testimony of President Willard of the Baltimore & Ohio, who said that a reduction of 7500 men could be effected on that road in five years merely by a policy of not replacing with new men the 1500 or so that die or resign every year. He said he thought the testimony in the Great Northern Pacific case was that the roads did not expect to secure all their economies at once and that many would take years to accomplish. Senator Couzens said he was concerned with the whole program

of efficiency and that it seemed to him the whole burden should not be placed on the employees.

Senator Brookhart asked if the situation as to holding companies is an emergency making it necessary to act now. Mr. Eastman replied that holding companies have been very active in the past year and that he could only judge the future by the past, and that the commission has no authority over them except as to a violation of the Clayton law. It is now looking into the acquisitions by the Alleghany and Pennroad corporations to see whether there are any violations and he would not undertake to say whether there are any, but there are certain difficulties involved in procedure under that law.

Mr. Eastman pointed out that the commission has approved 314 acquisitions of control, involving 52,363 miles, since the transportation act was passed.

Senate Resolution Suggested

Senator Fess raised the question as to whether a Senate resolution directed against the Great Northern Pacific case would have any effect, and Senator Dill remarked that he had introduced a resolution to forbid the commission to approve a consolidation of the Northern lines.

Senator Pittman then asked the effect on the commission of a Senate resolution, or of the passage by the Senate of the joint resolution if the House should not act on it. Commissioner Eastman said that the law would not be changed by action of the Senate alone, although the commission might possibly postpone some action, if legislation seemed imminent, until it could ascertain how the House would act. Senator Wheeler also asked if the commission would be influenced by a request of the Senate to hold up action in the Great Northern Pacific case. The commission would pay attention to anything the Senate said, Mr. Eastman replied, but of course would be governed by the law. Referring to the language of the resolution and the commission's suggested amendment he said that the word "unification" is not defined and that it is uncertain how the courts might interpret it.

Senator Pittman asked if it would not be advisable to require railroads desiring to consolidate to agree with the commission in advance on a valuation for rate purposes. Mr. Eastman saw several legal difficulties in such a plan, such as the question whether the government could coerce a company into accepting something less than its constitutional right, but that he would be glad to go into the subject if hearings are held on the Howell rate-base bill.

Chairman McManamy, who appeared on April 21, said the resolution seemed to him to be in line with what the commission has been recommending for five years and to represent an effort to maintain the status quo until Congress can clarify the present law. He said he believed the law intends that the commission shall preserve the competition of trunk lines but that there is a question as to where the commission should draw the line as to how much competition is substantial. When Senator Hawes asked if there is any danger of a consolidation of the Northern lines before the next session Mr. McManamy said that it might be approved at once if the roads present a substantial compliance with the conditions. He said he shared the objections against legislative rate-making but that the commission has been urging clarification of the law for a long time and held up its consolidation plan for nine years. "Now consolidation has become an active subject," he said, "and if the holding companies continue in the next year

or so to make the progress they have in the past two years it won't make much difference what law you put on the statute books unless we have a law to unscramble them." Chairman McManamy said he was inclined to agree with Commissioner Eastman's suggestion that a suspension of the relief from the anti-trust laws might be adequate.

Commissioner Brainerd said that he agreed that all forms of consolidation should be brought under the jurisdiction of the commission and that possibly railroads should be prohibited from acquiring stock in other companies without the approval of the commission, as national banks are prohibited from investing in other banks. He thought the effect of an indefinite suspension of the commission's authority would be to delay and perhaps discourage some consolidations that would be very desirable and he mentioned the pending application of the Missouri Pacific for authority to unify its subsidiaries by lease as one to which there is little opposition. Asked his opinion of the Hawes bill he said he thought the commission now has ample authority to impose such conditions, although perhaps not to the extent of requiring the roads to buy the homes of the employees.

Asked how the commission could find the Great Northern Pacific unification in the public interest after the decision of the Supreme Court in the Northern Securities case, Commissioner Brainerd pointed out that the situation has greatly changed since 1904, when the two Northern lines had somewhat of a monopoly in the territory, because since then the Milwaukee and Canadian National have built additional transcontinental lines, while the Union Pacific has increased its mileage in the northwest, so that there is much more competition in the territory. He said that the report is not binding on the commission which would have to reach a new decision if the supplemental plan is submitted to it.

Commissioner Porter Sees Need for Strong Systems

It remained for Commissioner Porter, however, to give the committee a comprehensive explanation of the theory on which the commission had found that a unification of the northern lines would be in the public interest, and also, of the relation between the anti-trust laws and the transportation act, he raised his voice and pressed his statement with sufficient vigor to get it through the interruptions of the Senators. Mr. Porter pointed out that Congress had told the commission to provide for the consolidation of the railroads into a limited number of systems and, among other conditions, to preserve competition as fully as possible. This made it necessary, he said, to eliminate some competition between two lines, in some cases in order to build up strong competition between systems. He pointed out that only a very small percentage of the traffic of the two Northern lines is competitive, and outlined the whole western situation to show how the commission felt it necessary to try to build up both the Milwaukee and the Northern system as strong competitors of the systems to the north and south of them pointing out that while it proposed to allow the two Northerns to go together, at the same time it intended to weaken them by requiring them to give up the Burlington and to strengthen the Milwaukee by requiring the Northern lines to open their western terminals to it and to give it trackage over the Spokane, Portland & Seattle. "So," he said, "if the Northern lines pay the very large price the majority put upon them as a condition precedent to unification they will

have also built up their competitor, the Milwaukee." He said he thought the commission is under obligation to hold further hearings in case the supplemental plan is presented to it. Mr. Porter also referred to the Missouri Pacific unification as one to which there is little objection. He said he was in favor of consolidations as necessary to enable the railroads to strengthen themselves in competition with motor traffic, waterways and airplanes. Referring to the latter part of the Couzens resolution he said he was very doubtful if it would reach what the committee wants it to reach except in cases where acquisitions of holding companies may contravene the anti-trust laws, Senator Pittman, who had previously criticized the Northern report, seemed much impressed with Commissioner Porter's statement and said he would be satisfied if all the commissioners were like him, but because he apparently did not understand that Mr. Porter was expressing the view of the majority he asked if it would not be appropriate to provide by law that the commission should only allow elimination of competition between two lines when there is a third line to afford competition.

Mr. Hines appeared before the committee on April 23 and explained many features of the Great Northern Pacific unification case which had been misunderstood in connection with previous testimony, showing that instead of reducing the number of employees the plan of the companies would probably result eventually in more employment. He said that instead of having ignored the interests of labor the officers of the companies had shown in the testimony before the commission that several years would be required to effect all the economies proposed and that any reduction of forces that would result would be met by simply omitting to fill vacancies, so that there would be no general or wholesale discharge. However, he said, the unification plan will make it possible for the Great Northern to use for locomotive fuel, coal from mines on the Northern Pacific in Montana which would add about 1,600,000 tons a year to the coal production of that state while its transportation to the Great Northern would exceed in volume that which would be displaced by the use of shorter routes. He also pointed out that the unification would result in an increased manufacture of rolling stock in the Northwest.

There has been unnecessary alarm and great exaggeration, Mr. Hines said, as to the effect of the proposal on labor and on communities largely dependent on railroad labor, and most of the communities that intervened in the case favored the unification. "Labor is not menaced," he said, "the contrary will be the effect." He also said that he would not object if the commission should attach a condition to any order it should issue providing that there should be no reduction in employment except such as could be taken care of by the natural turnover, but, in reply to questions, he said that the commission has adequate power under the present law and he thought it better that the commission should have discretion to balance various elements of the public interest against each other rather than that Congress should adopt some drastic rule to prohibit reduction in forces. He referred to many of the general and exaggerated statements made before the committee as an indication that Congress is not itself in a position to get at all of the fact and that discretion should be allowed to a tribunal that is in a position to investigate the facts. When Senator Couzens remarked that the commission has never attached conditions relating to labor and that there is no assurance that it will, Mr. Hines pointed out that the statement of the executives of the

northern lines at the hearing had been given wide publicity at the time, 1927, and that labor had not intervened in the case, so it was assumed that the testimony had fairly met the situation, and that probably that was the reason the commission had not dealt with the subject. Senator Pittman said he thought the commission has the power to impose such conditions but that it is not advised as to what Congress thinks should be the policy, and he suggested legislation to make the policy clear.

Taking up the subject of competition, Mr. Hines showed that 75 per cent of the traffic of the two lines is local and that of the 25 per cent that is now competitive only 2 per cent will not have competition with other roads after the unification. He also showed that the zone of about 400 miles including the northern tier of states has more railroad competition than the 1,200-mile zone south of it. The theory of the anti-trust laws was that no two carriers might be combined if there was any substantial competition between them, he said, regardless of the amount of other competition in the territory. Under that theory there could be few combinations, but the transportation act adopted a different theory, that, while competition should be preserved the test is as to how much competition the public interest requires and the commission in this case decided that sufficient competition would be preserved. The suggestion made by Commissioner Eastman, he said, would be to go back to the old theory of the anti-trust laws, which were inefficient and extreme, and would afford little opportunity to work out any improvement in the existing situation by avoiding unnecessary waste. Mr. Hines was to continue his testimony on April 24 and told the committee he would discuss the matter of the present status of the unification plan.

Record Business on Union Pacific

(Continued from page 968)

ment. Retirements totaled \$4,450,594 and the net addition to property investment was \$11,409,618. Among the important additions and betterments were a number of new station structures, water facilities at eight points, enginehouse improvements at two points, numerous new bridges, enlarged telephone facilities, 335 miles of color light signals, a new fuel station, several grade crossing elimination projects, extensive additions to wood preserving equipment, 122 new track motor cars, etc. Equipment purchases included 25 locomotives, 500 freight cars and 60 passenger train cars. The locomotives were of the 4-12-2 type, tractive power 96,650 lb. for use in freight. The system at the end of the year had 1,670 standard gage locomotives of an average tractive power of 49,260 lb.

The more numerous classes of locomotives in service at the end of the year were as follows:

Type	No. in Service	Average Tractive Power (lb.)
2-8-0	480	41,540
2-8-2	362	51,400
0-6-0	196	30,983
4-6-2	187	35,998
2-10-2	144	72,127
4-6-0	80	29,479
2-8-8-0	70	108,832
4-12-2	63	96,650
4-8-2	60	54,838

Train Accidents in August

REPORTS of train accidents issued by the Interstate Commerce Commission for the month of August, 1929, cover six collisions and five derailments. Abstracts of these reports follow:

Collisions

Chicago, Milwaukee, St. Paul & Pacific, Wadsworth, Ill., August 9, 5:05 p. m.—This accident occurred on the double track line from Milwaukee, Wis., southward to Chicago, but in this report the trains moving toward Chicago are classed as eastbound and the opposite movements westbound. Eastbound passenger train No. 46, on the westbound track, moving at 20 or 30 miles an hour, ran over a facing point switch and collided with the head of a westbound freight standing on the side track; the engineman and fireman of the passenger train were killed. A trespasser also was killed. Twenty passengers and two employees were injured.

The passenger train, by order No. 29, had run on the left-hand track from Ranney, about nine miles north of Wadsworth. Russell (four miles north of Wadsworth) is a station where on previous occasions No. 46 had been returned to its normal track, and Operator Porter, at Wadsworth, by mistake, this time copied the order to read Russell instead of Wadsworth. The order was sent by telephone to all three of these points and Porter had failed to check his copy with the repetitions made by other stations. The inspector concludes that Porter was mentally disturbed about personal affairs. The operator who was relieved by Porter at 4 p. m., said that, apparently because he had something on his mind, Porter was not paying proper attention to his duties; and the other operator, on his way home, gave considerable thought to the matter but concluded there was no occasion for making further inquiry or protest. Operator Newyear, at Russell, testified that Porter had repeated the order correctly. Newyear should have stopped No. 46 at his station until he could get permission, under the manual block system rules, from Wadsworth for it to proceed; but this he did not do, depending on the train orders to prevent any movement northward from Wadsworth in the face of No. 46.

The direct cause of the collision was the open switch. This switch is about one mile north of Wadsworth station but is controlled by the operator. He had turned it because he was sure the road was clear for the northbound freight. The action of Porter in setting the switch for the freight before he knew that the freight had a right to go, and his carelessness in copying the order, are attributed to the fact that he clearly was not in proper mental condition to attend to his duties. It is held that the operator at Russell had no reasonable excuse for neglecting to carry out the manual block system rule. The engineman of No. 46 is also at fault for his failure to reduce speed to 10 miles an hour when approaching the interlocking limits at Wadsworth; also for ignoring the indication of the dwarf signal which was set at stop because of the switch being set for the side track. Thus, each of three employees failed to perform his own duties properly while yet any one of the three could have prevented the collision. The final injunction of the report is that it is necessary to guard continually against taking chances; against the inclination to act upon assumption, and against the idea that one employee can wink at the rules himself and depend upon the care of another to prevent disaster. Operator Porter and the engineman had had over 30 years' ex-

perience, and Operator Newyear had had over 10 years' experience.

Baltimore & Ohio, Wilsmere, Del., August 11, 3 a. m.—A string of freight cars in the yard was pushed forward without a proper signal and ran into the side of locomotive No. 4623, without train, moving in the opposite direction; and the fireman of this locomotive was killed. It appears that back-up signals, given with a hand lantern, which had been intended for 4623, were given in such a way (parallel to the track) that one of them was understood as a proceed signal by the man running the pushing locomotive (the fireman, not the engineman). At all events, the inspector could not find that any person had given a proceed signal, and as this fireman was about 1000 ft. away, it is the conclusion that he mistook one of the back-up signals. The inspector says that if two brakemen, who should have been on or near the moving freight cars, had been there instead of crossing to the far side of another track, it is possible that the collision could have been prevented.

Denver & Salt Lake, Volcano, Colo., August 12, 7:25 a. m.—A work train moving westward at about three miles an hour collided with a section motor car, moving east, at about seven miles an hour, and three employees on the motor car were injured, two of them fatally. The cause is given as failure of the section foreman to provide proper flag protection.

Grand Trunk Western, Morrice, Mich., August 18, 5:41 a. m.—Eastbound freight train 484, second section, moving at 35 to 45 miles an hour, ran into the rear of eastbound freight train No. 486 which had been stopped because of delay to a preceding freight; one locomotive, one caboose and ten cars were wrecked. The engineman and fireman were killed and one brakeman injured. The collision occurred in a dense fog within one or two minutes after the leading train had been stopped. It was primarily due to second 484 being run at excessive speed, considering the weather conditions. The report contains a long statement as to what was done with fuses but the evidence is conflicting, the men on the following train maintaining that they did not see any fuses where the other crew said that fuses had been thrown off. This road has automatic block signals on its line (double track) between Chicago and Battle Creek and the report expresses the belief that, in view of the average daily train movement, 36 trains a day, "there is justification for a recommendation that steps be taken toward providing block signal protection" on this part of the road. The train dispatcher testified that in extreme cases of inclement weather, and where conditions warrant it, trains are blocked one station apart but, apparently, the fog on this day was not classed as extreme inclement weather.

Fort Wayne-Lima, Middlepoint, Ohio, August 21, 4:28 a. m.—Westbound freight train extra 763 consisting of seven cars, hauled by electric motor 763, passed France Siding contrary to an order which had been received, and collided with eastbound extra 853, while moving at from 25 to 40 miles an hour. The eastbound train had been brought to a stop. Both motor cars were demolished and two freight cars were badly damaged. The motorman of the westbound train was killed and five other employees were injured. The motorman of the eastbound train saw the headlight of the other when it was about two miles away, but it was not realized that the westbound train was on the main track, and approaching, until within about 1000 ft. The conductor of the westbound train says that as he was approaching

France Siding, he was dozing, and did not awaken until a moment before the collision occurred. He was riding in the front end of the motor but did not know whether or not the motorman also was asleep. The conductor said that he was in good physical condition and did not feel tired when he went on duty at 10:30 p. m. The inspector thinks that the motorman as well as the conductor was asleep. The conductor had made his brakeman acquainted with the contents of the train order but the brakeman was unable to state whether the order required the stop to be made at France or at Cave. This brakeman said that at the time of the collision he was sitting in the motor car examining bills and reports for the purpose of learning the work of a conductor's position; and the report says that if he had not been so occupied in studying clerical duties, he might not have been so careless as not to discover the mistake of the conductor. This brakeman had been in the service only a little over one month.

Pennsylvania, Royalton, Pa., August 26, 3:30 a. m.—Eastbound freight extra 1369 ran into the rear of eastbound freight extra 1045 which had been stopped to take water, and engine 1369 was overturned. Several cars were wrecked and the engineman and one brakeman were killed; one fireman was injured. The collision occurred within yard limits and the engineman of 1369 is censured for not properly controlling his speed. The line is operated by the manual block system and he had received a permissive signal at the entrance of the block. The report, however, places the primary blame on the conductor and the flagman of 1045, for not providing proper flag protection. This train had been stopped a short distance back to take some cars and the report questions the judgment of the engineman in calling in the flagman when he fully intended to stop again at the water column. The front end brakeman knew that a stop was to be made for water yet neglected to mention this to other members of the crew when he might easily have done so.

Derailments

Tonopah & Tidewater, Soda, Cal., Monday, August 5, 7:45 a. m.—Northbound mixed train No. 25 was derailed at bridge 36-A which had been washed off its bearings by a flood, and the engineman and fireman were killed. There had been a severe rain storm on Sunday in the mountains west of the railroad and also some rain near the track, causing a flood in a bed ordinarily dry; the bridge was floated to a point 50 ft. east of the track. There are only six scheduled trains a week on this road; No. 25 north bound on Monday, Wednesday and Friday and No. 26 southbound on Tuesday, Thursday and Saturday. There had been no train over the line since Saturday night and the blame is placed on the section foreman. The rule requires the road to be patrolled every day, Sundays included. The track was seasonably examined as far south as mile post 38 but, says the report, the track walker should have continued four miles farther to the south end of his section.

Southern, Daisy, Tenn., August 7.—A work train consisting of 17 cars or more, being pushed slowly on a side track, was derailed at the end of the track; the leading car struck a store building, killing one person therein. There is a reverse curve on the side track and the engineman had not a good view of the leading portion of the train. The blame is laid on the engineman and on the brakeman who failed to keep himself where he could be seen both by the conductor at the

leading end and by the engineman. The rule requires an engineman, when he loses the view of the man who should give hand signals, to bring his train to a stop. There is a second side track, leading off from the first one, and this second is longer. The engineman sought to excuse himself by saying that he assumed that the cars were being pushed into the other track.

St. Louis-San Francisco, Henrietta, Okla., August 18, 5.59 a.m.—Northbound express train No. 118 was derailed at a facing point switch, making a bad wreck, the locomotive being overturned. Twelve passengers and two employees were killed and 27 passengers, two mail clerks and two express messengers were injured. The employees killed were the engineman and the fireman; the passengers killed were riding in the day coach, which lodged in such a position in the wreck that its occupants were scalded by steam from the locomotive. The derailment was due to a partly open switch, apparently the results of malicious tampering. No trouble had been experienced with main line switches in this vicinity, though yard-track switches sometimes were found cocked or partly opened. It is believed that the switch was open so little that the target did not serve to warn the engineman that it was in wrong position.

Pennsylvania, Condit, Ohio, August 18.—Southbound passenger train No. 614, consisting of 12 cars, drawn by locomotives 7142 and 7271, moving at about 60 miles an hour on a descending grade, was derailed and 251 passengers and three employees were injured. The leading locomotive remained on the rails but its tender ran off the track, and the second locomotive and its tender were both derailed and overturned. The first six cars were derailed. An iron nut $\frac{3}{4}$ -in. thick and $1\frac{1}{4}$ -in. square, found near the track, is believed to have been lying on the rail and to have caused the derailment. Where the nut came from could not be discovered but, says the report, it is possible that it had been riding loose on some part of the locomotive.

Central of Georgia, Glenwood, Ala., August 29.—Eastbound passenger train No. 16, moving at about 35 miles an hour, was derailed at a highway crossing and the locomotive was overturned. The fireman was killed and the engineman injured. There was sand on the track and this is given as the cause of the derailment. The crossing is not planked and the highway on both sides is descending toward the track. A heavy rain had fallen about 15 minutes before this train came along, and although the ditches and arrangement of grades to protect against high water appear to have been unexceptionable, this rain is put down as the cause of the sand being washed on the track. The section foreman lives four miles away and no section men were on duty at the time of the accident.

THE TARUS EXPRESS, recently inaugurated by the Turkish State Railways, has reduced traveling time from western Europe to Egypt and India to about 10 days, according to Department of Commerce reports. The new train, carrying three classes of passengers and sleeping and dining cars, leaves Istanbul (Constantinople) three times a week, an hour after the arrival of the Simplon Orient Express from London, Paris and Berlin. Connections for Egypt are made at Bayak, Syria, and for India at Nissibin, where automobile service is provided to Kerkuk, from which point trains run to Bagdad and Basra on the Persian Gulf.

Looking Backward

Fifty Years Ago

The Greenville & Columbia [now part of the Southern], extending from Columbia, S. C., to Greenville, 143 miles, was sold at Columbia on April 15 under a decree of foreclosure and was purchased for \$2,964,000 for the account of a combination formed by the second-mortgage bondholders.—*Railroad Gazette*, April 23, 1880.

The Kansas City, St. Joseph & Council Bluffs, running north from Kansas City, Mo., along the Missouri river to Council Bluffs, Iowa, 199 miles, and with about 55 miles of branch lines, has passed into the control of the Chicago, Burlington & Quincy, having been purchased by Boston capitalists interested in the latter road. This acquisition is an important one, giving the Burlington access to Kansas City and a number of other points on the Missouri river at which competition is active.—*Railway Age*, April 29, 1880.

The master car builders and superintendents of nine roads operating east of Chicago and north of the Ohio river met at Buffalo, N. Y., on April 22 and 23, and after examining 17 different styles of cars and discussing their features, agreed upon a standard for each of the following named varieties: Box cars, four and eight wheels; stock cars, single and double deck; gondola cars, four and eight wheels; flat cars. The specifications for these cars have not yet been made public, but the important fact is that a standard was chosen.—*Railway Age*, April 29, 1880.

Twenty-Five Years Ago

Henry Miller, general superintendent of the Missouri district of the Chicago, Burlington & Quincy, has been appointed general manager of the Wabash. T. F. Whittelsey, former general superintendent of the Toledo & Ohio Central, and more recently general manager of the Toledo Terminal has been appointed general manager of the Mobile, Jackson & Kansas City [now part of the Gulf, Mobile & Northern].—*Railway Age*, April 28, 1905.

The first 10 days of the rate hearings now being conducted by the Senate committee on interstate commerce have been taken up with the testimony of the general counsel of the Atchison, Topeka & Santa Fe, the president of the Boston & Maine and the attorney for the Louisville & Nashville. They declared that it would be dangerous and almost revolutionary to intrust to any government commission so sweeping a power over railroads and the business interests of the country as that involved in the direct making of rates.—*Railway Age*, April 28, 1905.

Ten Years Ago

The new headhouse of the St. Paul (Minn.) Union station was opened for business on April 4. The structure, which cost \$1,500,000, is part of the general terminal improvement in St. Paul which will be completed in 1923 and will cost about \$14,000,000.—*Railway Age*, April 23, 1920.

Representatives of the "outlaw" strikers were refused an immediate hearing before the Railroad Labor Board on Monday at Washington on the ground that they had not complied with the terms of the law and that cases brought before the board in accordance with the procedure outlined by the law were entitled to precedence.—*Railway Age*, April 23, 1920.

The disturbance of railroad passenger traffic in and around New York, resulting from the yardmen's strike, has been gradually abated during the past week and train movements are now nearing normal, but the freight situation continues to be much restricted. At Chicago, Department of Justice agents arrested the leaders of the Chicago Yardmen's Association and the United Enginemen's Association, the organizations which have been behind the walkout, while the strike has been gradually collapsing.—*Railway Age*, April 23, 1920.

Communications and Books

Comment on Extended Piston Rods

ST LOUIS, Mo.

TO THE EDITOR:

I was very much interested in Doctor Giesl's excellent description of the Austrian 2-8-4 locomotive in *March 22 Railway Age*, and particularly in his comments on extended piston rods in the last paragraph on page 687, where he states "Certainly the extension is expensive nonsense unless made sufficiently stiff to carry the piston properly which, oddly enough, is often neglected."

It seems very few engineers appreciate that the length of the main rod has a great deal to do in determining the plane in which the piston head travels. The shorter the main rod, the more wear is found in the top of the cylinder bore at mid-stroke and at the bottom of the bore at the stroke ends. This peculiar wear is caused by the crosshead lifting the piston head when the crosshead is flattened against the top guide by the angularity of the main rod at the top and bottom quarter, because the piston rod is rigidly attached to the crosshead.

This movement is borne out by the number of piston rods that break in close proximity to the rigid fit in the crosshead and the number of cylinder packing rings that are broken by the dropping of the piston head at both ends of the stroke when that main rod is in line with the piston rod.

The greater the amount of play between the crosshead and the guides, the greater is the lifting and dropping of the piston head, and the greater is the bending stress on the piston rod at the rigid crosshead fit.

With this action understood, it is evident that the extended piston-rod bearing is called upon to carry the weight of the piston head only at the ends of the stroke where it is subject to quite a hammer blow. In other words, the effect of the angularity of the main rod on the crosshead and the crosshead's rigid connection to the piston rod does not permit the piston head to travel in a line determined by the cylinder bore.

W. J. SCHLACKS.

New Book

Centenary History of the Liverpool & Manchester Railway. By C. F. Dendy Marshall, M.A., Trinity College, Cambridge, England. Published by the Locomotive Publishing Company, Ltd., 3, Amen Corner, London, E.C. 4, England. Price \$7.50.

The author of this book is well-known in Great Britain and is becoming better known in this country as a writer of authority on railroad subjects. In addition to being a frequent contributor to British railway trade papers, he is the author of two well-known books, namely, "The Resistance of Express Trains" and "Two Essays in Early Locomotive History." This book is written in Mr. Marshall's interesting style and contains a large number of illustrations, one of which is a map of the Liverpool & Manchester with a profile of the line which includes the one and one-half miles of track over which the Rainhill Trials were run. There are many illustrations in color, and in many respects the book is an excellent example of the printer's art.

The account given in this Centenary History of the Liverpool & Manchester is based on a careful study of every work included in the bibliography outlined in Chapter XIV. References are given for all of the more important statements, except such as either are unlikely ever to be questioned, or can be quite easily verified. There are fifteen chapters in the book and a profusion of illustrations in color, most of which are reproduced from originals in Mr. Marshall's collection. Other illustrations were loaned by Robert Stephenson & Company from the book entitled "A Century of Locomotive Building."

Chapter I describes briefly the Liverpool & Manchester and its means of communication down to 1825; Chapter II, the state of railway development in 1825; Chapter III, the preliminaries; Chapter IV, the makers of the line; Chapter V, the construction; Chapter VI, the Rainhill Trials; Chapter VII, the opening day; Chapter VIII, the line as a going concern, and Chapters IX and X, the regular and supplementary locomotives. The remaining chapters discuss the builders of the locomotive, branch and connecting railways, the early views of the line and commemorative medals and miscellaneous objects of interest. The appendix contains a transcript of the relevant portions of Rastrick's "Rainhill" notebook.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Annual Report of the Director General of Railroads, 1929. Discusses trustee accounts, collections from carriers, Railway Express Agency, Inc., pending litigation, employees' compensation awards, finances. 6 p. Pub. U. S. Govt. Print. Off., Washington, D. C.

The Cape-to-Cairo Route, compiled by Leo Weinthal. Special Supplement to the Illustrated London News, February 22, 1930. A series of articles on the natural resources, scenic attractions, and transportation facilities by rail, water, and air. Illustrations and maps. 44 p. Pub. by Illustrated London News, London, England.

Coördinated Motor-Rail-Steamship Transportation, by G. Lloyd Wilson. Discusses significance of coördinated transport, the terminal problem with special reference to the St. Louis plan, the Cincinnati plan, and services at New York and Chicago, rail-motor line-haul coördinated freight services, Boston and Maine services, container car services, terminal cartage in England and in Canada, store-door freight service, motor-railroad passenger services, motor rail-cars, motor-electric railway service, steamship-motor services, and the objectives of coördination. 228 p. Pub. by D. Appleton & Co., New York City. \$3.50.

The Geographic Aspects of Transportation, by W. O. Blanchard. A series of questions and maps to be used in the study of the law of trade, trade centers, land and inland water transport, ocean transport and air transport. 92 p. Pub. by Henry Holt & Co., New York City. \$1.75.

Preliminary Statement of Capitalization and Income, Class I Railways....Year Ended December 31, 1929. Statement No. 3060 (Sixth in the Series) compiled by Bureau of Statistics, Interstate Commerce Commission. 33 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., 35 cents.

Periodical Articles

The Co-ordination of Transport, by Ashton Davies. "Co-ordination is a word of which more is being heard today than ever before. Various people have various interpretations and for the purposes of this paper I will define co-ordination as the blending of transport in its different forms, and of the different units within each form, to provide the maximum of service at the minimum of cost." p. 251. *Journal of the Institute of Transport*, April, 1930, p. 251-259, with Discussion p. 259-266.

Master Builder, by Lee Foster Hartman. Episodes on the last journey of a man who "through a vast sector of the continent, once a stubborn, unclaimed wilderness... had thrust the thin wedge of his railroad by sheer, grim persistence." A short story. *Harper's*, May, 1930, p. 696-704.

Railroads Join Pullman Company in Drive to Fill Empty Berths. Reduced rates, and luxurious equipment. *Business Week*, April 16, 1930, p. 14-15.

Odds and Ends of Railroading

Grass Cutting Record

Sectionmaster L. L. Matthis, of the Atlantic Coast Line at Fincher, Fla., claims the world's grass cutting record. He and his force cut grass from 31,780 ft. of right of way, or 6 mi. 100 ft., in 24 working days.

Another Kentucky Colonel

After some months' inactivity, so far as railroaders were concerned, the governor of Kentucky has again appointed a railroader as a colonel on his staff. This time it's Trainmaster John C. Moore, of the Louisville terminals of the Louisville & Nashville.

Boston and Albany

Perhaps you didn't know that there are two railroads in this country whose terminals are Boston and Albany. First, the Boston & Albany, operating between Boston, Mass., and Albany, N. Y., second, the Georgia Northern, operating between Boston, Ga., and Albany.

Bridge Champions

The recent city-wide bridge tournament held in Dallas, Texas, resulted in a sweeping victory for the Missouri-Kansas-Texas, and particularly for the engineering department of that line. J. L. Noel, rodman in the office of the engineer maintenance of way, won first prize with high total, and Mrs. F. A. Hughes, secretary to the engineer maintenance of way, had the second highest score.

This is Probably the Record

TO THE EDITOR:

In Odds and Ends of March 8, you refer to numerous crossings of a single stream on the Southern Pacific and on the Boston & Albany. Just west of Dubuque, Iowa, the Illinois Central crosses Catfish creek 19 times in 6.02 miles, with a maximum of five crossings in one mile.

CHICAGO.

S. F. GREAR,
Asst. Engineer of Bridges, Illinois Central.

Prohibit Actors' Interurban Autos

It may be of interest to passenger agents to know that vaudeville actors on the "big time" are forbidden to use automobiles. A notice posted back-stage at the State-Lake theatre, Chicago, calls their attention to the fact that the use of automobiles for transportation between one city and another constitutes a violation of contract. According to the notice, actors who travel by motor either don't arrive on time or else arrive in no fit condition to do their work.

Long Tickets

Pennsylvania ticket sellers have recently made records in the way of long tickets. G. L. Masters, sales manager of the National Lock Washer Company, recently bought one in Newark, N. J., that was 132 in. long, and contained 45 coupons. An editor recently purchased a ticket at the Pennsylvania Station in New York that was 83 in. long, involved transportation over 17 different railways, and called for a trip of more than 13,500 miles, more than half the distance around the globe.

"Layin' 'em Down"

Some track-laying records that may possibly be equalled, but seldom surpassed, were hung up recently on the Norfolk & Western, according to the February issue of the employees'

magazine of that road. One track gang, headed by Sam Melvin, laid 3,205 feet of 130-lb. rail through the Norfolk & Western's Coaldale tunnel in one hour and 17 minutes, while another, in charge of J. M. Beckner, extra-gang foreman, laid 15,600 ft. of rail of the same section between Front Royal, Va., and Riverton, in nine hours. Melvin's record was one foot in .024 minute, which is all the more remarkable since the work was done in the relatively restricted space within the tunnel, while Beckner's—scarcely less noteworthy when the length of time during which the record was maintained is considered—was one foot of rail for every .034 minute.

Is Chewing-Gum Food?

The Interstate Commerce Commission, it seems, must now decide whether chewing-gum is a food or not. The National Association of Chewing Gum Manufacturers seeks to have it transferred from first class to second class, which includes food and confections, in order that it may be shipped at a lower rate. And it must be admitted that this is a tough one. Funk & Wagnalls defines food as "that which is eaten or drunk for nourishment;" and this would hardly seem to apply to chewing-gum, which is not eaten or drunk for nourishment, but chewed for exercise. Yet if chewing-gum is not a food, then what is it?

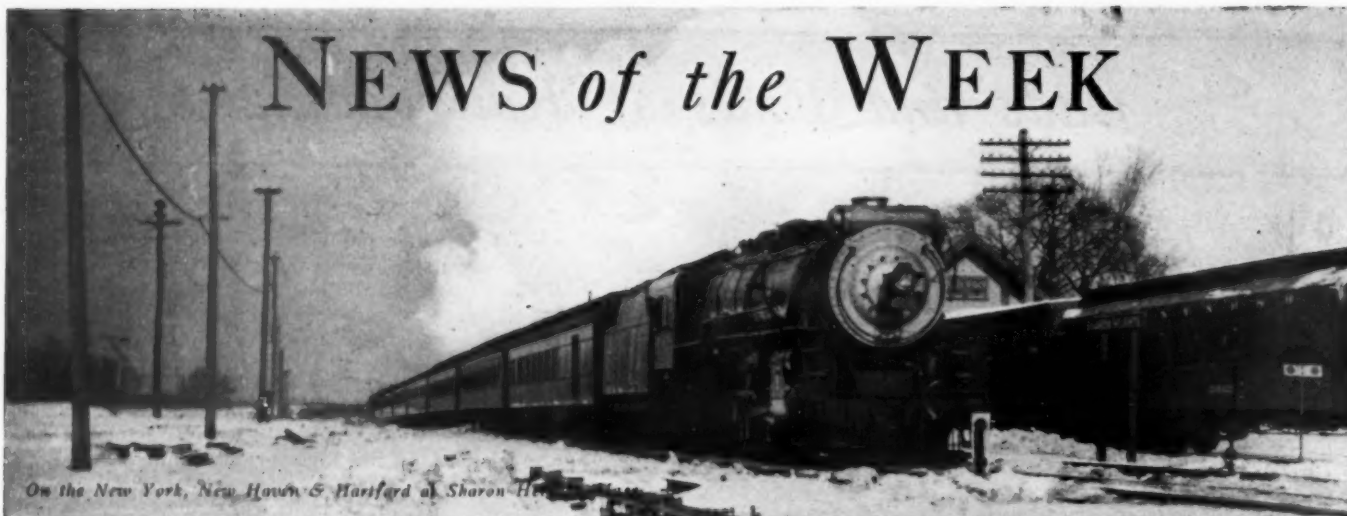
It is manifest that anything which gives muscular strength to the jaw promotes the consumption of food; and anything which promotes the consumption of food is commonly regarded as itself a food, since it forms an integral part of the meal. Soup is an excellent illustration of this. By itself it is as devoid of nutritious content as chewing-gum; the caloric coefficient of each is zero, which is about as low as you can go. Yet who questions the status of soup as food?

The next point is whether chewing-gum lends muscular strength to the jaw. In our opinion, it does. We cannot speak on this point from first-hand knowledge; yet we have observed that those persons who are addicted to chewing gum, particularly those of the feminine gender, seem to have prodigious jaw development. And after all, doesn't it stand to reason? When you exercise any muscle, it becomes stronger, and as we have seen, the main object of chewing gum is to exercise the jaw muscles. Therefore, it seems to us that the case is as complete as a case well can be. Chewing-gum is a food, and entitled to travel at the same rate as apple sauce.—New York World.

* * *



NEWS of the WEEK



On the New York, New Haven & Hartford at Sharon-Hartford

THE PACIFIC RAILWAY CLUB will hold its next meeting at Hotel Oakland, Oakland, Cal., on Thursday evening, May 8. William M. Barr, consulting chemist of the Union Pacific System, will speak on engine failures and materials.

EVERY DRIVER OF A MOTOR COACH carrying passengers in New York state, is now required by law to bring his vehicle to a full stop before crossing a railroad at grade. This is Chapter 575 of the Laws of 1930 which has just been signed by the governor.

THE HOUSE and Senate have adopted the conference report on the independent offices appropriation bill by which the House accepted the amendment made by the Senate increasing the appropriation for the Interstate Commerce Commission to \$9,325,963.

GENERAL PLUTARCO ELIAS CALLES, chairman of the committee now studying the Mexican railways, presided recently at the opening for operation of the new branch of the National of Mexico, extending between Guerrero, S.L.P., and Calles, Tam., 80 miles, and connecting the San Luis Potosi-Tampico and Monterrey-Tampico lines.

THE AMERICAN RAILWAY ASSOCIATION has applied to the Interstate Commerce Commission for a rehearing and reargument or a modification of the commission's findings as to the rules for car-hire settlement, particularly those which would require a modification of the per diem rules.

SENATOR COPELAND, of New York, has introduced in the Senate a resolution directing the Interstate Commerce Commission to report to the Senate its opinion on the feasibility of requiring each railroad subject to the interstate commerce act to establish a pension fund for its employees, together with a statement of the plan for establishing such a fund which the commission deems most feasible.

THE SENATE COMMITTEE ON INTERSTATE COMMERCE on April 15 submitted to the Senate a favorable report on the bill to increase the salary of the chief inspector of the locomotive bureau of the Interstate Commerce Commission from

\$6,000 to \$7,500, that of the assistant chief inspector from \$5,000 to \$6,000, and those of the district inspectors from approximately \$3,800 a year to \$4,000 a year.

THE PUBLIC SERVICE COMMISSION OF NEW YORK state has received an additional appropriation of \$215,800 under which it will make numerous additions to its staff; a research and valuation bureau, a bureau of rural electrification, 17 additional accountants, nine electrical engineers, and an additional grade crossing engineer; also other additions to the general staff.

SENATOR SMOOT has introduced in Congress a bill, S.4254, to authorize the Secretary of the Treasury, with the approval of the Interstate Commerce Commission, to compromise the indebtedness to the United States on account of loans made under section 210 of the transportation act of any railroad that is in receivership, or to accept securities therefore in connection with a reorganization plan.

CONSTRUCTION OF A NEW OFFICE BUILDING in Washington for the Interstate Commerce Commission, at an estimated cost of \$4,500,000, to begin this year, is included in a list of approved public building projects transmitted to Congress on April 21 by the President. The building is to be located at Twelfth and B Streets. The commission has for many years occupied a rented building erected for its use.

THE GREAT NORTHERN has asked the district court of Ramsey county, Minn., for permission to dissolve the Great Northern Terminal Railway Company, a subsidiary organized to operate that road's freight terminal in St. Paul, Minn. A hearing will be held on May 3, at which time the railroad will show that there is no longer any need for the subsidiary to handle the activities of the terminal and that the central organization can direct the work. Dissolution of the Minneapolis Belt Line Company is also being sought.

THE ATTORNEY GENERAL of Missouri, Stratton Shartel, on April 10, at the request of residents of Macon, Mo., instituted a suit in the Missouri supreme court

to compel the Chicago, Burlington & Quincy to construct an extension from Elmer, Mo., to Macon, about 15 miles. The attorney general contends that the charter issued by the state to the Iowa & St. Louis, which is now a part of the Burlington, provided for the construction of the line to Macon from the north and that since the charter is in effect a contract, the state has the power to require fulfillment of the purposes for which the company was chartered.

JOHN OBAGGE has been sentenced to 11 months imprisonment for neglect of duty as a crossing watchman on the Erie at Garfield, N. J. The sentence followed his trial for manslaughter at Hackensack, on April 9, and was imposed by Judge Mattocks. Obagge, on February 15, last, beginning his tour of duty at 3 p.m., absentmindedly neglected to lower the gates as a train approached, about 4 p.m., and a man in an automobile drove on to the track and was killed. Obagge pleaded guilty, and admitted that he had taken intoxicating liquor at his home before coming to work. He had been an employee of the Erie for six years.

New York State Grade Crossings

The governor of New York has signed a law just passed—Chapter 517—creating a state debt of \$26,000,000 and appropriating that amount for elimination of grade crossings within the limits of New York City.

Alternating Current Track Circuits

This is the title of the eighth pamphlet of the series which is being issued by the Signal Section of the American Railway Association. This chapter of the forthcoming complete work is Number XI and it consists of 84 pages. The price is 35 cents to the general public and 25 cents to railroad employees.

Crank Pins Shrunk by Liquid Air

The Spokane, Portland & Seattle has been experimenting with the use of liquid air in the shrinking of crank pins when assembling them with the driving wheels of locomotives. Usually the crank pins are pressed into the driving

wheels. At its Vancouver, (Wash.) shop, an 8-in. pin was recently shrunk with liquid air and placed in the main driving wheel of a Pacific type locomotive.

Damages for Train Derailed at Crossing

Damages of \$10,000 have been awarded to the Cleveland, Cincinnati, Chicago & St. Louis against Frank Cordera, of Benld, Ill., who drove his truck in front of a train. This case was decided in the District Court for the Southern District of Illinois at Springfield on April 14. The driving of the truck upon the track resulted in the derailment and overturning of the locomotive and five freight cars. The railroad brought suit for \$30,000 damages.

Construction Contracts Show Increase

Contracts awarded during the first quarter of 1930 for public works and utilities construction have broken all records covering the same period for the past five years, according to a statement issued by Secretary Lamont of the Department of Commerce. Railroad construction showed an increase of 128 per cent, from \$30,973,000 in the first quarter of last year to \$70,648,000 in the first quarter of 1930, while railway buildings showed an increase from \$10,949,000 to \$24,258,000, or 55 per cent.

Ralph Budd to Study Soviet Railroads

Ralph Budd, president of the Great Northern, has accepted the invitation of the Soviet Republic of Russia to advise in connection with the reconstruction and rehabilitation of the railways of that country and will sail from the United States on June 1 to be absent for three months. The invitation received by Mr. Budd through the Amtorg Trading Corporation of New York was general in nature and he expects to give any advice or make any survey requested.

Transportation Corps Association, A. E. F. Reunion

The annual reunion and banquet of the Transportation Corps Association, American Expeditionary Forces, will be held at the Pennsylvania Hotel, New York, on May 24. All former officers of the Transportation Corps, who served either in France or in this country during the war, are eligible for membership in the association and are invited to be present at the reunion and banquet.

The banquet will be held at 6:30 p.m. and the reunion throughout the day, with headquarters at the Hotel Pennsylvania.

Those desiring to attend the banquet or who are eligible for and interested in obtaining membership in the association should communicate with Captain E. P. Palmer, secretary-treasurer, 50 Church street, New York.

Other officers of the Association are: President, W. W. Atterbury; Vice-

Presidents, Samuel M. Felton, William J. Wilgus, George T. Slade, Henry M. Waite and H. B. Moore; Trustees, H. H. Maxfield, C. A. Stern, R. W. Stovel, George W. Butts, J. V. Reaph, G. C. Sparks, J. J. Vogdes and T. P. Watson.

New York Port Authority

The legislature of New York has passed five bills enlarging the powers of the Port of New York Authority, the body jointly established by the states of New York and New Jersey for the exercise of the powers of the respective states in connection with railroad and water transportation in and around New York City.

Chapter 418 of the laws of 1930, abolishes the New York State Bridge and Tunnel Commission. Chapter 419 amends the compact between the two states. Chapter 420 calls for study and report upon a (second) tunnel under the Hudson River. Chapter 421 puts the Holland Tunnel under the direction of the Port of New York Authority. Chapter 422 relates to the appointment of the New York State members of the Port of New York Authority.

Railway Subjects on Water Works Ass'n. Program

The first day's program of the twenty-second annual convention of the Illinois section of the American Water Works Association, which was held at the Stevens Hotel, Chicago, on April 23 and 24, contained a number of papers and discussions of interest in the railway field. Among the papers presented on the afternoon of the first day were the following: Production and Distribution of Water for Railway Use, J. P. Hanley, inspector of water service, Illinois Central; Treatment of Water for Railway Boiler Use, C. H. Koyl, engineer water service, Chicago, Milwaukee, St. Paul & Pacific; Sanitary Control of Railway Water Supply, R. E. Coughlan, supervisor water supply, Chicago & North Western; Effect of Improper Coagulation on Boiling Characteristics of Water, G. J. Fink, director of research, National Aluminate Corporation.

Mississippi Sleeping Car Tax

A privilege tax on sleeping cars which the Gulf, Mobile & Northern operates over its own tracks, must be paid by that road to the state of Mississippi according to a ruling of the State Supreme Court in reversing a decision of the county circuit court at Jackson, Miss., on April 14. The amount to be paid the state is \$6,000, the privilege tax being \$2.50 per mile plus penalties, and the mileage in the state over which the railroad ran sleeping cars being 335.81 in 1927 and 407.47 miles in 1928 and 1929. The railroad contended that it had reported its sleeping car earnings along with all other earnings each year in order to show its gross earnings and thus decide its privilege tax as a railroad for which it paid \$25 per mile as a second class road, but the court held that in reporting earnings the company ought to treat its regular railroad business and

its sleeping car business as separate and distinct.

Equipment on Order

The railroads on April 1, had 37,117 freight cars on order, according to reports received by the Car Service Division, American Railway Association. On the same day last year, there were 42,561 cars on order and two years ago there were 25,248. The number of new freight cars installed in service during the first three months this year totaled 24,739, compared with 8,544 for the same period in 1929, or an increase of 16,195 cars.

The railroads had more locomotives on order on April 1, 1930, than on any similar date since 1926, the number on that day this year having been 442. On April 1 last year, it was 372. Locomotives placed in service in the first three months this year totaled 189 compared with 118 in the same period in 1929 and 435 in 1928. Of the freight cars on order on April 1, 1930, reports showed 21,442 were box cars and 11,208 were coal cars. Refrigerator cars on order totaled 2,052; flat cars, 2,010; stock cars, 250, and other miscellaneous freight cars, 155.

Pennsylvania Women's Aid

The Women's Aid of the Pennsylvania Railroad, Mrs. W. W. Atterbury, director general, has issued its annual report. During 1929 these women workers, consisting chiefly of wives, daughters, mothers and sisters of Pennsylvania employes, visited 33,280 railroad families, giving assistance wherever required in the form of money, medical attention, food, clothing and fuel, and carrying flowers, fruits and other delicacies to the sick or injured. Aid was extended to a total of 9,631 families. In carrying on the work there was expended \$220,200, all raised by dues and voluntary contributions from members, the holding of bazaars, sales of candy and clothing, and subscription dances. Expenditures for relief amounted to \$146,217.

At the Christmas season 3,133 families were visited; baskets of food, toys, etc. were distributed and 6,370 greeting cards were sent to pensioners and shut-ins.

Membership in the Women's Aid, at the close of 1929, stood at 215,751, an increase of 18,307 over 1928.

Report of Freight Container Bureau

D. T. Lawrence (chairman of the Official Classification Committee) chairman of the joint committee in charge of the Freight Container Bureau, has issued the annual report of the bureau for the year 1929. The pamphlet of 24 large pages consists principally of the report of chief engineer Edward Dahill and the material submitted by Mr. Dahill.

The bureau has an increasing number of calls for its services by manufacturers, shippers, and carriers, and the force of eight engineers is kept constantly busy.

The number of conferences with
(Continued on page 987)

Operating Statistics of Large Steam Railways—Selected Items for February, 1930, Comp

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line				
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, Excluding locomotives and tenders	Net. Revenue and non-revenue	Service-able	Un-service-able	Per cent un-service-able	Stored	
New England Region:													
Boston & Albany.....	1930	407	182,888	194,620	19,975	4,342	64.6	236,760	87,770	102	24	19.3	33
	1929	407	189,963	200,779	18,949	4,686	67.3	241,190	89,856	106	22	16.8	27
Boston & Maine.....	1930	2,066	347,721	403,058	55,113	11,381	68.1	614,790	235,885	261	53	16.8	68
	1929	2,070	369,430	435,768	56,413	11,944	70.2	612,369	236,262	297	30	9.1	72
N. Y., New H. & Hart.....	1930	2,106	405,563	471,986	28,791	13,466	61.8	762,012	288,271	287	57	16.5	50
	1929	2,102	475,116	532,641	29,464	14,275	68.0	755,665	302,803	287	74	20.5	24
Great Lakes Region:													
Delaware & Hudson.....	1930	875	312,244	414,955	44,676	9,556	62.6	603,215	286,076	235	32	12.0	82
	1929	875	312,779	417,250	41,405	9,608	64.3	582,826	279,205	235	36	13.3	72
Del., Lack. & Western.....	1930	998	436,581	482,445	55,977	14,494	66.7	833,047	347,619	240	52	17.7	34
	1929	998	516,084	586,643	71,098	17,485	69.5	960,124	416,374	240	49	17.0	6
Erie (inc. Chi. & Erie)....	1930	2,316	806,180	865,711	63,811	34,022	61.8	2,073,837	834,333	406	92	18.5	78
	1929	2,316	872,345	953,483	81,544	37,167	64.0	2,247,631	961,811	404	103	20.3	15
Grand Trunk Western.....	1930	1,020	276,209	279,539	4,268	8,032	65.1	446,078	165,493	91	28	23.8	30
	1929	992	335,031	338,166	3,766	10,170	67.2	545,572	200,935	112	27	19.3	8
Lehigh Valley	1930	1,343	483,935	530,451	60,162	14,620	63.5	888,725	379,136	253	85	25.2	12
	1929	1,343	517,127	569,656	60,569	15,946	66.0	923,383	396,509	308	103	25.0	43
Michigan Central	1930	1,865	475,139	476,058	14,935	16,072	59.9	935,008	321,985	189	41	17.6	36
	1929	1,822	586,078	598,937	20,429	20,941	62.0	1,161,884	406,524	200	45	18.4	15
New York Central.....	1930	6,468	1,869,380	2,078,127	153,538	68,654	59.4	4,323,272	1,819,228	1,015	321	24.0	239
	1929	6,467	2,027,107	2,290,322	169,880	75,428	60.6	4,680,626	1,975,367	921	398	30.2	84
New York, Chi. & St. L....	1930	1,665	597,715	609,196	5,153	18,184	61.0	1,070,265	403,557	204	55	21.2	29
	1929	1,665	650,751	657,961	7,345	21,075	64.0	1,206,730	479,824	212	68	24.3	31
Pere Marquette	1930	2,177	404,258	408,118	3,130	9,851	61.4	607,245	249,940	172	27	13.7	24
	1929	2,178	424,088	427,645	4,347	11,016	63.4	659,633	288,231	180	32	15.2	18
Pitts. & Lake Erie.....	1930	231	110,601	114,461	1,322	3,798	57.9	302,035	165,328	50	14	21.5	13
	1929	231	128,720	129,844	2,416	4,616	59.6	371,329	207,531	54	10	16.1	10
Wabash	1930	2,497	748,188	792,476	13,157	21,844	61.6	1,294,525	468,076	292	76	20.6	24
	1929	2,497	881,980	922,349	12,549	25,402	63.9	1,456,566	550,260	285	75	20.9	7
Central Eastern Region:													
Baltimore & Ohio.....	1930	5,541	1,618,527	1,871,037	239,346	48,643	60.2	3,288,170	1,492,012	987	219	18.2	152
	1929	5,536	1,861,217	2,130,282	256,730	53,076	61.1	3,562,687	1,659,064	964	249	20.5	78
Central of New Jersey....	1930	693	238,617	258,835	39,070	6,763	56.3	475,349	218,122	168	33	16.6	14
	1929	691	250,188	270,610	42,253	7,143	57.2	489,955	229,498	174	35	16.7	18
Chicago & Eastern Ill.....	1930	946	220,549	222,077	2,802	5,662	62.8	359,360	159,859	96	64	39.9	23
	1929	946	266,144	268,065	3,613	6,751	63.2	431,749	199,168	87	72	45.4	8
Big Four Lines.....	1930	2,712	758,959	785,267	21,765	22,365	58.9	1,500,438	683,653	316	140	30.7	10
	1929	2,718	866,188	900,920	27,085	25,659	58.7	1,749,438	811,864	342	125	26.7	3
Elgin, Joliet & Eastern*....	1930	453	126,199	134,266	7,159	3,425	59.8	265,528	135,066	79	15	15.9	...
	1929	453	152,440	164,289	8,904	4,176	62.0	320,856	166,675	82	6	6.3	...
Long Island	1930	400	42,662	46,778	12,773	470	52.7	33,828	13,080	48	8	14.8	...
	1929	400	38,474	42,207	15,924	545	53.7	36,884	13,854	50	10	16.0	...
Pennsylvania System....	1930	10,690	3,447,212	3,961,455	390,334	118,569	61.8	7,951,124	3,600,418	2,378	366	13.3	577
	1929	10,738	3,720,284	4,314,304	413,211	126,848	62.9	8,490,102	3,938,879	2,728	314	10.3	659
Reading	1930	1,452	600,395	649,145	50,806	15,531	57.7	1,133,608	553,916	335	64	16.0	35
	1929	1,453	667,863	695,070	48,130	16,697	59.8	1,169,819	579,657	331	78	19.0	21
Poconos Region:													
Chesapeake & Ohio.....	1930	2,740	1,022,536	1,085,460	42,285	34,541	54.0	2,869,904	1,524,014	512	84	14.1	60
	1929	2,730	1,098,048	1,187,168	48,919	37,006	55.5	3,012,884	1,619,601	530	100	15.9	32
Norfolk & Western.....	1930	2,230	794,102	907,092	56,517	28,696	56.7	2,472,850	1,306,382	445	48	9.7	75
	1929	2,230	869,146	1,009,672	45,636	31,194	57.0	2,701,779	1,440,953	482	58	10.7	85
Southern Region:													
Atlantic Coast Line.....	1930	5,155	632,233	633,328	9,291	16,696	59.3	936,963	323,129	400	57	12.6	90
	1929	5,148	694,465	699,507	9,177	18,296	57.9	1,024,526	350,266	440	54	10.9	80
Central of Georgia.....	1930	1,500	235,222	236,807	4,309	6,017	71.5	317,954	131,096	123	30	19.3	5
	1929	1,898	240,213	241,819	3,496	6,205	72.3	319,877	129,876	130	22	14.2	10
Ill. Cent. (inc. Y. & M. V.)	1930	6,694	1,708,447	1,724,211	29,521	45,029	60.4	3,010,731	1,253,786	715	116	14.0	14
	1929	6,710	2,006,231	2,019,863	31,461	51,949	61.4	3,472,736	1,503,794	747	102	12.0	16
Louisville & Nashville....	1930	5,247	1,441,103	1,532,245	45,570	30,424	56.8	2,147,752	999,468	553	143	20.5	26
	1929	5,247	1,626,769	1,712,917	61,517	34,183	58.5	2,389,371	1,143,731	605	112	15.6	25
Seaboard Air Line.....	1930	4,491	541,416	554,386	6,144	13,846	63.3	801,483	298,379	270	26	8.8	3
	1929	4,475	572,736	594,710	6,798	15,005	61.4	868,318	304,775	255	57	18.3	...
Southern	1930	6,676	1,328,191	1,356,112	26,453	31,731	62.4	1,842,151	718,962	791	164	17.2	141
	1929	6,679	1,413,681	1,445,624	33,049	34,608	63.9	1,953,589	785,064	832	131	13.6	102
Northwestern Region:													
Chi. & North Western....	1930	8,459	1,247,953	1,306,430	25,081	31,938	61.9	1,885,164	767,879	744	99	11.8	59
	1929	8,467	1,475,292	1,573,948	31,294	33,376	60.8	2,055,902	784,340	767	91	10.6	56
Chi., Milw., St. P. & Pac..	1930	11,244	1,446,208	1,542,986	79,835	39,375	60.7	2,435,401	983,193	820	135	14.2	240
	1929	11,248	1,665,712	1,799,405	107,572	44,513	63.7	2,667,319	1,131,779	802	131	14.0	126
Chi., St. P., Minn. & Om..	1930	1,724	290,694	314,585	14,059	5,764	63.9	337,658	140,061	142	30	17.3	21
	1929	1,724	328,342	359,551	17,684	6,215	62.3	368,341	152,447	152	19	11.1	17
Great Northern	1930	8,339	729,035	744,565	41,530	23,002	66.6	1,366,264	607,812	466	147	24.0	70
	1929	8,377	821,030	850,379	68,058	25,650	69.3	1,494,677	697,245	494	142	22.4	78
Minn., St. P. & S. St. M....	1930	4,388	388,907	401,772	4,834	10,392	69.0	559,885	244,291	190	40	17.3	25
	1929	4,357	477,597	494,565	7,139	11,832	69.5	636,211	285,201	208	44	17.6	31
Northern Pacific	1930	6,468	634,944	675,160	47,006	20,053	70.7	1,128,538	497,238	420	99	19.1	55
	1929	6,476	772,694	828,857	52,686	23,373	71.8	1,300,487	587,				

ared with February, 1929, for Roads with Annual Operating Revenues above \$25,000,000.

Region, road and year	Average number of freight cars on line			Per cent un-serv-ice-able	Gross ton-miles per train-hour, ex-cluding locomotives and tenders	Gross ton-miles per train-mile, ex-cluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Loco-motive-miles per loco-motive-day
	Home	Foreign	Total										
New England Region:													
Boston & Albany.....1930	4,187	3,855	8,042	5.1	19,034	1,295	480	20.2	390	29.9	7,700	172	60.8
1929	3,155	5,066	8,221	3.6	18,140	1,270	473	19.2	390	30.2	7,883	187	61.5
Boston & Maine.....1930	10,317	9,909	20,226	3.7	22,050	1,768	678	20.7	417	29.5	4,077	118	52.2
1929	10,253	10,901	21,154	2.9	20,764	1,658	640	19.8	399	28.7	4,077	124	53.9
N. Y., New H. & Hart..1930	16,835	14,409	31,244	10.1	24,398	1,879	711	21.4	330	24.9	4,889	118	52.1
1929	14,955	16,176	31,131	9.9	21,218	1,590	637	21.2	347	24.1	5,145	125	55.6
Great Lakes Region:													
Delaware & Hudson.....1930	9,550	5,447	14,997	3.8	24,415	1,932	916	29.9	681	36.3	11,677	143	61.4
1929	9,078	6,077	15,155	3.6	22,596	1,863	893	29.1	658	35.2	11,396	153	60.5
Del., Lack. & Western...1930	18,820	6,938	25,758	4.7	24,855	1,908	796	24.0	482	30.1	12,438	150	65.9
1929	15,887	8,500	24,387	4.0	23,493	1,860	807	23.8	610	36.9	14,898	156	81.1
Erie (inc. Chi. & Erie)..1930	34,732	18,086	52,818	3.1	34,606	2,572	1,035	24.5	564	37.2	12,866	119	66.7
1929	30,270	20,916	51,186	4.5	31,928	2,577	1,103	25.9	671	40.5	14,831	129	72.9
Grand Trunk Western...1930	3,778	11,123	14,901	6.1	23,754	1,615	599	20.6	397	29.6	5,797	115	85.0
1929	2,339	15,450	17,789	5.8	21,706	1,628	600	19.8	403	30.4	7,238	116	88.2
Lehigh Valley1930	19,396	8,539	27,935	6.1	26,349	1,836	783	25.9	485	29.5	10,083	162	62.4
1929	20,550	8,812	29,362	9.5	24,841	1,786	767	24.9	482	29.4	10,541	165	54.9
Michigan Central.....1930	25,186	13,351	38,537	3.9	33,643	1,968	678	20.0	298	24.9	6,165	116	76.4
1929	18,837	20,065	38,902	5.1	31,134	1,982	694	19.4	373	31.0	7,969	121	90.2
New York Central.....1930	75,562	59,755	135,317	4.3	31,489	2,313	973	26.5	480	30.5	10,046	113	59.6
1929	68,233	70,439	138,672	5.1	29,685	2,309	974	26.2	509	32.0	10,909	122	66.6
New York, Chi. & St. L. 1930	14,834	9,428	24,262	7.3	26,828	1,791	675	22.2	594	43.9	8,658	112	84.7
1929	12,871	11,417	24,288	6.9	25,750	1,854	737	22.8	706	48.4	10,294	120	84.8
Pere Marquette1930	10,717	7,575	18,292	3.6	22,199	1,502	618	25.4	488	31.3	4,100	110	73.8
1929	9,801	9,745	19,546	3.6	20,177	1,555	680	26.2	527	31.7	4,727	117	72.9
Pitts. & Lake Erie.....1930	16,310	6,113	22,423	8.1	19,124	2,731	1,495	43.5	263	10.4	25,533	121	64.9
1929	12,995	8,079	21,074	11.6	18,032	2,885	1,612	45.0	352	13.1	32,048	115	73.9
Wabash1930	17,997	12,275	30,272	2.4	28,491	1,730	626	21.4	552	41.9	6,696	125	78.4
1929	13,884	15,526	29,410	2.5	25,842	1,651	624	21.7	668	48.3	7,872	144	92.8
Central Eastern Region:													
Baltimore & Ohio.....1930	75,104	25,365	100,469	4.9	24,367	2,032	922	30.7	530	28.7	9,617	154	62.5
1929	71,031	30,285	101,316	6.4	21,893	1,914	891	31.3	585	30.6	10,702	167	70.3
Central of New Jersey...1930	17,566	10,268	27,834	5.0	25,189	1,992	914	32.3	280	15.4	11,246	156	52.9
1929	18,151	11,132	29,283	6.1	22,844	1,958	917	32.1	280	15.2	11,869	166	53.6
Chicago & Eastern Ill...1930	12,775	3,932	16,707	41.7	25,577	1,629	725	28.2	342	19.3	6,034	138	50.3
1929	12,507	4,522	17,029	40.9	24,015	1,622	748	29.5	418	22.4	7,517	151	61.2
Big Four Lines.....1930	24,593	21,129	45,722	4.2	28,730	1,977	901	30.6	534	29.7	9,004	121	63.2
1929	20,658	23,966	44,624	4.5	26,381	2,020	937	31.6	650	35.0	10,669	129	71.0
Elgin, Joliet & Eastern..1930	9,724	7,977	17,701	4.4	14,462	2,104	1,070	39.4	273	11.6	10,643	137	53.7
1929	9,094	9,075	18,169	6.3	12,559	2,105	1,093	39.9	328	13.2	13,134	159	71.1
Long Island1930	722	4,535	5,257	1.4	6,005	793	307	27.8	89	6.1	1,167	366	38.0
1929	1,597	4,473	6,070	2.8	6,110	959	360	25.4	82	6.0	1,236	342	34.6
Pennsylvania System...1930	225,147	67,087	292,234	3.3	28,731	2,307	1,044	30.4	440	23.5	12,029	132	56.6
1929	214,696	80,031	294,727	5.7	27,203	2,282	1,059	31.1	477	24.4	13,100	140	55.5
Reading1930	30,811	12,436	43,247	4.3	21,620	1,888	923	35.7	457	22.2	13,623	159	62.7
1929	28,813	13,386	42,199	3.2	21,157	1,752	868	34.7	491	23.6	14,248	161	64.9
Pocahontas Region:													
Chesapeake & Ohio.....1930	32,628	10,663	43,291	2.2	36,392	2,807	1,490	44.1	1,257	52.7	19,863	93	67.5
1929	29,125	11,665	40,790	3.0	33,522	2,744	1,475	43.8	1,418	58.4	21,186	100	70.1
Norfolk & Western.....1930	33,499	9,061	42,560	0.9	42,694	3,114	1,645	45.5	1,096	42.5	20,922	128	69.9
1929	27,172	9,956	37,128	0.9	41,971	3,109	1,658	46.2	1,386	52.6	23,076	137	69.9
Southern Region:													
Atlantic Coast Line.....1930	25,616	9,544	35,160	4.5	21,494	1,482	511	19.4	328	28.6	2,239	106	50.2
1929	24,136	9,973	34,109	5.0	20,913	1,475	504	19.1	367	33.1	2,430	112	51.3
Central of Georgia.....1930	5,857	3,424	9,281	6.2	19,472	1,352	557	21.8	504	32.4	2,464	138	56.3
1929	4,527	4,392	8,919	5.6	18,315	1,332	541	20.9	520	34.4	2,444	149	58.0
Ill. Cent. (inc. Y. & M. V.) 1930	44,453	19,775	64,228	3.9	24,413	1,762	734	27.8	697	41.5	6,689	141	75.4
1929	39,758	24,410	64,168	4.1	22,630	1,731	750	28.9	837	47.1	8,004	154	86.3
Louisville & Nashville...1930	46,893	13,699	60,592	8.3	19,747	1,490	694	32.9	589	31.6	6,803	153	81.1
1929	41,735	19,399	61,134	9.0	17,679	1,469	703	33.5	668	34.2	7,785	160	88.4
Seaboard Air Line.....1930	15,895	8,092	23,987	3.8	19,639	1,480	551	21.5	444	32.6	2,373	131	67.7
1929	16,120	8,924	25,044	7.0	19,774	1,516	532	20.3	435	34.9	2,432	136	68.9
Southern1930	52,362	15,392	67,754	12.0	19,817	1,387	541	22.7	379	26.8	3,846	159	51.7
1929	49,082	18,199	67,281	8.8	19,043	1,382	555	22.7	417	28.8	4,198	169	54.8
Northwestern Region:													
Chi. & North Western...1930	49,493	25,982	75,475	5.4	19,532	1,511	615	24.0	363	24.4	3,242	147	56.4
1929	45,703	31,603	77,306	6.4	17,111	1,394	532	23.5	362	25.4	3,308	166	66.9
Chi., Mil., St. P. & Pac. 1930	54,584	18,719	73,303	3.1	22,485	1,684	680	25.0	479	31.6	3,123	138	60.6
1929	50,577	29,030	79,607	2.9	19,375	1,601	679	25.4	508	31.4	3,593	160	73.1
Chi., St. P., Minn. & Om. 1930	2,701	9,786	12,487	9.7	15,470	1,162	482	24.3	401	25.8	2,902	137	68.5
1929	2,727	10,012	12,739	8.7	13,274	1,122	464	24.5	427	28.0	3,159	163	78.9
Great Northern1930	42,484	9,207	51,691	5.4	23,805	1,874	834	26.4	420	23.9	2,603	146	45.8
1929	38,859	11,096	49,955	4.6	21,584	1,820	849	27.2	498	26.5	2,973	167	51.6
Minn., St. P. & S. St. M. 1930	19,534	4,515	24,049	3.2	17,950	1,440	628	23.5	363	22.4	1,988	117	63.1
1929	18,474	6,054	24,528	4.2	15,320	1,332	597	24.1	415	24.8	2,338	130	71.1
Northern Pacific.....1930	40,312	6,200	46,512	8.0	23,960	1,777	783	24.8	382	21.8	2,746	155	49.6
1929	37,068	7,524	44,592	8.6	21,980	1,683	761	25.2	471	26.1	3,242	179	56.2
Ore.-Wash. R.R. & Nav. 1930	7,914	3,247	11,161	4.7	21,643	1,603	703	26.1	418	23.6	2,078	176	52.8
1929	7,343	3,805											

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 173 Steam Railways, Including 16 Switching and Terminal Companies

FOR THE MONTH OF FEBRUARY, 1930 AND 1929

Item	United States		Eastern District		Southern District		Western District	
	1930	1929	1930	1929	1930	1929	1930	1929
Average number of miles operated	242,359.49	242,124.50	60,592.79	60,425.39	45,778.70	45,762.57	135,988.00	135,936.54
Revenues:								
Freight	\$327,060,998	\$363,777,416	\$144,467,470	\$160,266,808	\$62,501,910	\$68,604,803	\$120,091,618	\$134,905,805
Passenger	a 61,253,542	b 68,392,704	31,728,377	34,371,434	10,296,295	11,844,259	19,228,870	22,177,011
Mail	8,817,134	c 8,782,386	3,297,737	3,287,622	1,493,580	1,536,193	4,025,817	3,958,571
Express	7,957,523	9,531,236	3,426,865	4,547,603	1,318,357	1,635,677	3,212,301	3,347,956
All other transportat'n	13,674,929	15,938,546	7,916,368	8,951,632	1,080,643	1,122,513	4,677,918	5,864,401
Incidental	8,476,768	9,055,396	4,307,824	4,745,556	1,403,972	1,405,963	2,764,972	2,903,877
Joint facility—Cr.	1,022,061	991,997	310,894	330,989	181,619	144,182	529,548	516,826
Joint facility—Dr.	322,385	313,768	76,377	77,699	32,779	35,435	213,229	200,634
Railway operating revenues	427,940,570	476,155,913	195,379,158	216,423,945	78,243,597	86,258,155	154,317,815	173,473,813
Expenses:								
Maintenance of way and structures	53,224,541	55,542,835	22,605,519	23,455,020	11,167,312	11,605,642	19,451,710	20,482,173
Maintenance of equipment	89,315,428	94,360,278	41,683,359	45,200,963	15,964,208	16,356,220	31,667,861	32,803,095
Traffic	10,738,150	10,287,222	4,150,055	3,848,915	2,040,904	1,962,402	4,547,191	4,475,905
Transportation	157,591,909	171,028,668	5,397,940	80,118,700	25,407,369	27,440,383	56,786,600	63,469,585
Miscellaneous operat's	4,430,150	4,470,063	2,078,484	2,060,899	665,855	675,166	1,685,811	1,733,998
General	16,129,334	15,573,279	7,120,533	6,743,252	2,629,511	2,620,081	6,379,290	6,209,946
Transportation for investment—Cr.	850,176	713,495	121,432	188,034	138,014	57,419	590,730	468,042
Railway operating expenses	330,579,336	350,548,850	152,914,458	161,239,715	57,737,145	60,602,475	119,927,733	128,706,660
Net revenue from railway operations	97,361,234	125,607,063	42,464,700	55,184,230	20,506,452	25,655,680	34,390,082	44,767,153
Railway tax accruals	28,760,737	31,548,021	11,195,427	12,552,021	5,821,669	6,127,763	11,743,641	12,868,237
Uncollectible ry. revs.	90,291	82,669	40,842	27,081	11,013	22,411	38,436	33,177
Railway operating income	68,510,206	93,976,373	31,228,431	42,605,128	14,673,770	19,505,506	22,608,005	31,865,739
Equipment rents—Dr. balance	7,173,899	7,318,027	3,799,864	4,086,134	112,838	41,193	3,261,197	3,190,700
Joint facility rent—Dr. balance	1,884,296	1,934,697	865,881	877,349	209,002	206,937	809,413	850,411
Net railway operating income	59,452,011	84,723,649	26,562,686	37,641,645	14,351,930	19,257,376	18,537,395	27,824,628
Ratio of expenses to revenues (per cent) ..	77.25	73.62	78.27	74.50	73.79	70.26	77.71	74.19

FOR TWO MONTHS ENDED WITH FEBRUARY, 1930 AND 1929

Item	United States		Eastern District		Southern District		Western District	
	1930	1929	1930	1929	1930	1929	1930	1929
Average number of miles operated	242,358.94	242,126.89	60,596.23	60,431.16	45,772.19	45,761.54	135,990.52	135,934.19
Revenues:								
Freight	\$665,028,866	\$731,017,145	\$293,210,994	\$321,716,007	\$128,405,096	\$137,957,254	\$243,412,776	\$271,343,884
Passenger	e 131,700,002	f 143,389,444	69,297,857	73,277,066	21,226,356	23,527,512	41,175,789	46,584,866
Mail	18,264,275	g 18,073,280	6,928,320	6,849,022	3,092,911	3,128,879	8,243,044	8,095,379
Express	16,246,721	18,630,781	7,256,289	8,730,032	2,643,835	3,156,952	6,346,597	6,743,797
All other transportat'n	28,213,814	32,201,551	16,396,489	18,138,704	2,148,789	2,241,008	9,668,536	11,821,839
Incidental	18,149,335	18,917,321	9,373,266	9,945,129	2,854,286	2,802,678	5,921,783	6,169,514
Joint facility—Cr.	2,145,397	2,052,890	674,743	697,220	363,919	295,959	1,106,735	1,059,711
Joint facility—Dr.	614,636	621,227	153,965	154,915	67,573	67,836	393,098	398,476
Railway operating revenues	879,133,774	963,661,185	402,983,993	439,198,265	160,667,619	173,042,406	315,482,162	351,420,514
Expenses:								
Maintenance of way and structures	108,093,446	113,965,964	46,699,201	48,528,904	22,448,829	23,383,719	38,945,416	42,053,341
Maintenance of equipment	185,156,949	194,600,134	86,677,288	93,151,983	32,887,427	33,578,715	65,592,234	67,869,436
Traffic	22,059,673	20,951,906	8,494,808	7,818,863	4,232,432	4,132,666	9,332,433	9,000,377
Transportation	331,054,341	351,107,923	156,700,022	164,780,799	53,156,077	56,117,916	121,198,242	130,209,208
Miscellaneous operat's	9,345,720	9,277,797	4,434,346	4,357,413	1,361,355	1,327,265	3,550,019	3,593,119
General	33,057,187	31,860,237	14,645,160	13,843,950	5,427,469	5,366,637	12,984,558	12,649,650
Transportation for investment—Cr.	1,752,757	1,461,295	257,677	303,907	227,167	131,853	1,267,913	1,025,535
Railway operating expenses	687,014,559	720,302,666	317,393,148	332,178,005	119,286,422	123,775,065	250,334,989	264,349,596
Net revenue from railway operations	192,119,215	243,358,519	85,590,845	107,020,260	41,381,197	49,267,341	65,147,173	87,070,918
Railway tax accruals	58,223,422	62,953,714	22,990,067	24,898,898	11,708,667	12,274,761	23,524,688	25,780,055
Uncollectible ry. revs.	181,983	155,505	88,452	60,861	25,238	34,923	68,293	59,721
Railway operating income	133,713,810	180,249,300	62,512,326	82,060,501	29,647,292	36,957,657	41,554,192	61,231,142
Equipment rents—Dr. balance	14,627,575	14,421,346	7,973,260	8,309,673	11,262	d 157,191	6,643,053	6,268,864
Joint facility rent—Dr. balance	3,917,107	3,913,338	1,826,749	1,877,098	422,596	346,610	1,667,762	1,689,630
Net railway operating income	115,169,128	161,914,616	52,712,317	71,873,730	29,213,434	36,768,238	33,243,377	53,272,648
Ratio of expenses to revenues (per cent) ..	78.15	74.75	78.76	75.63	74.24	71.53	79.35	75.22

a Includes \$2,960,231 sleeping and parlor car surcharge.

b Includes \$3,203,171 sleeping and parlor car surcharge.

c Includes approximately \$56,265 back mail pay.

d Deficit or other reverse items.

e Includes \$6,293,595 sleeping and parlor car surcharge.

f Includes \$6,518,280 sleeping and parlor car surcharge.

g Includes approximately \$56,265 back mail pay.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

News of the Week

(Continued from page 983)

executive and traffic officers during the year total 924; inspections of shipping containers numbered 936, and 1,097 carloads of various commodities have been examined. The engineers have given 17 illustrated lectures and numerous pamphlets have been issued. The leading subjects discussed in the present report are fresh fruits and vegetables, new furniture, machinery, commercial store fixtures, soda fountains and commercial refrigerators. In the past two years publications of the bureau have been distributed to the number of 69,890 copies.

I. C. C. Seeks to Enjoin Construction by Piedmont

Questions as to the jurisdiction of the Interstate Commerce Commission to refuse a construction certificate to the Piedmont & Northern electric railway have again been placed before the courts by a bill filed by the commission in the federal court for the western district of South Carolina asking an injunction to restrain the company from proceeding with construction work started on March 11 at Spartanburg, S. C., and Gastonia, N. C., with the intent of engaging in interstate commerce, without a certificate from the commission. The commission had denied the company's application for a certificate for extensions from Spartanburg to Gastonia and from Charlotte to Winston-Salem, N. C., and the company took the case to the Supreme Court in an effort to obtain a decision that the commission had not jurisdiction over it. The court declined to decide the case on a negative order of the commission so the company made a start on its construction work so as to get a test in another way.

General Foremen's Convention Program

The next annual convention of the International Railway General Foremen's Association will be held at Chicago September 16 to 19, inclusive. The speakers during the four-day meeting of the Association will include: F. R. Mays, general superintendent of motive power, Illinois Central, Chicago; L. Richardson, chief mechanical officer, Boston & Maine, Boston, Mass.; J. A. Anderson, assistant superintendent of motive power, Chicago, Milwaukee, St. Paul & Pacific, Milwaukee, Wis.; H. C. Stevens, general storekeeper, Wabash, St. Louis, Mo. The subjects of committee reports to be presented at this convention include the following:

Engine-Truck Maintenance and Lubrication; Chairman, A. T. Streeter, general foreman, New York, Chicago & St. Louis, Conneaut, Ohio.
Cost of Material Delays to Locomotives and Cars; Chairman, F. M. A'Hearn, general foreman, Bessemer & Lake Erie, Greenville, Pa.
Stabilization of Mechanical Shop Forces; Chairman, F. L. Baker, general foreman, Chicago & North Western, New Butler, Wis.
Inspection, Maintenance and Repairs to Gas-Electric Rail Cars; Chairman, W. H. Longwell, general foreman, Baltimore & Ohio, Gassaway, W. Va.

The General Foreman's Contribution to Fuel Economy; Chairman, C. M. Hillman, shop superintendent, Minneapolis & St. Louis, Marshalltown, Iowa.

Better Maintenance of Passenger Car Equipment; Chairman, J. W. Gibbons, general car foreman, Atchison, Topeka & Santa Fe, Topeka, Kan.

\$110,000,000 Proposed for Rivers and Harbors

The omnibus rivers and harbors bills, proposing to authorize appropriations amounting to over \$110,000,000 for river and harbor improvements, was introduced in the House on April 21 and was to be considered in the House on April 25. The introduction of the bill follows many weeks of consideration by the rivers and harbors committee, at hearings and executive sessions, of recommendations submitted by the Army Board of Engineers for Rivers and Harbors. Among other provisions it authorizes the Secretary of War to accept from the state of New York and state-owned Barge canal and Oswego canal and authorizes an appropriation for maintenance and operation of \$2,500,000 a year. The work proposed in the bill would extend over a period of several years and the actual funds would be provided in the annual War Department appropriation bills. Some of the principal expenditures proposed in the bill are: Delaware river, below Philadelphia, \$3,915,000; James river, Va., \$3,555,000; Mississippi river, between St. Louis, Mo., and Grafton, Ill., \$1,500,000; between mouth of Missouri river and Minneapolis, Minn., \$3,058,000; Missouri river, between Kansas City, Mo., and Sioux City, Ia., \$15,000,000; Tennessee river and tributaries, \$3,500,000; Allegheny river, \$3,615,000; Kanawha river, \$3,603,000; the Illinois waterway, \$7,500,000; Great Lakes connecting channels, \$29,266,000; Columbia river, \$1,866,000. The bill does not include the complete project for deepening the upper Mississippi which has been urged by members of Congress from Minnesota, and the total amount authorized is less than some of the earlier estimates of what would be included in the bill.

Scholarship at Stevens

The Mechanical division, American Railway Association, has a scholarship at Stevens Institute of Technology which will be vacant this September. It is available for the sons of members of the Mechanical division and the course leads to the degree of Mechanical Engineer. The course offered also includes instruction in electrical, civil and other branches of engineering.

Stevens Institute of Technology has set aside, for the benefit of the student chosen for this scholarship, the sum of \$1,200 from the unexpended income of the association's scholarship fund, of which \$200 will be credited toward the \$300 installment of tuition due on September 12, 1930. The remaining \$1,000 may be drawn on by the student at any time during his four-year course for the

purpose of paying any net tuition installment due under the sliding-scale plan, provided only that not more than \$400 shall be so used in any one academic year.

Applications for these scholarships should be in the hands of the secretary not later than July 1, 1930. The scholarship will be awarded by the president of the college, on the recommendation of the association, to the student who, on the basis of his complete high-school record and because of other indications of character and aptitude, is judged by him to be best qualified for a college education in engineering. Should there be no applications for this scholarship from the son of either a living or deceased member of the Mechanical division, the scholarship will then be available to the son of any railroad employee.

Full information as to the course of study, entrance requirements, arrangements for examination, etc., will be supplied by the secretary, V. R. Hawthorne, 431 South Dearborn street, Chicago.

"Plugging the Leaks"

"Plugging the Leaks" is one of the principal topics in the latest letter to employees issued by G. A. Briggs, superintendent of freight claim prevention of the Grand Trunk Western (Detroit, Mich.). By occasional circulars Mr. Briggs calls attention to various defects and deficiencies discovered in the practice of freight trainmen, freight house men and others handling freight. Subjects dealt with in the present circular include efficient checking of freight; mismailing of waybills; securing legible receipts for freight delivered; inspections of cars, etc. The legendary boy in Holland who saved the country by stopping a leak in a dyke, did so by holding his thumb in the opening; but in doing this, he nearly froze to death. The American boy would no doubt have found a stick to safeguard the dam and would have proceeded on his way to the movies. The American railroad man is in this circular enjoined to be as bright in saving freight as the American boy would be.

"Unlocated damage" is in reality another name for rough handling, says Mr. Briggs, and in lecturing his subordinates on rough handling, he includes unlocated damage; and he finds the total payments under these two heads in 1929 to have been \$164,682, an increase of about 10 per cent over the preceding year. The road has local rough-handling committees, and from these the circular anticipates during the current year a decided improvement. "Speed is necessary to get things done, but if the difference between a violent coupling and a gentle one amounts, say to 15 seconds, how much of that 15 seconds represents time saved when it takes the car repairer half a day or more to repair a car and the Claim Department much longer to calm down an outraged customer?"

Freight loss and damage payments made by the road during the last five years, *all causes*, amounted to about seven-tenths of one per cent of the gross freight revenue; and Mr. Briggs calls upon all concerned to unite to cut this down to one-half of one per cent.

Missouri Commission Hears Alleghany Request for M. P. Control

The Van Sweringen interests and the Alleghany Corporation have invested \$99,676,458 in the Missouri Pacific Railroad Company, in acquiring control of that road, John P. Murphy, secretary of the Van Sweringen holding company, testified on April 21 at a hearing before the Missouri Public Service Commission at Jefferson City, Mo. During the hearing on the application by the Alleghany Corporation to control in excess of 10 per cent of the stock of the Missouri Pacific, it was testified that the interest in the road consists of \$23,886,812 of bonds; 232,800 shares of preferred stock, or 32.4 per cent of the outstanding issue, and 545,700 shares of common stock, or 65.87 per cent of the outstanding issue. The par value of these securities was estimated at \$101,850,000.

Representatives of the Alleghany Corporation stated that if the application is approved, L. W. Baldwin, president, and other officers will be retained in their present capacities on the Missouri Pacific. Physical consolidation of the Missouri Pacific with the New York, Chicago & St. Louis is not planned and general offices of the former road would remain in St. Louis.

Mr. Murphy testified that the Alleghany Corporation now owned securities of 13 railroads including the Missouri Pacific. He listed the holdings, with the percentage in each road as follows:

Atchison, Topeka & Santa Fe, 85,000 shares of common, 2 per cent; Chesapeake & Ohio, 93 shares of common; Chesapeake Corporation, 1,276,400 shares of common, 70 per cent; Erie, 215,000 shares of common, 9.9 per cent; Great Northern, 11,500 shares of preferred, 4 per cent; Kansas City Southern, 106,100 shares of common, 20 per cent; Lehigh Coal & Navigation Co., 33,546 shares of common, 17 per cent; New York Central, 215 shares of common, 1 per cent; Nickel Plate, 167,100 shares common, 24 per cent; Pere Marquette, 45,500 shares of common, 7.8 per cent; Pittston Company, 474,940 shares, 44 per cent; Wheeling & Lake Erie, 54 shares of prior lien stock; Missouri Pacific, 545,700 shares of common and 232,800 shares of preferred, 50.3 per cent.

No objection to the proposed control was voiced at the hearing, which lasted only one day. The commission took the case under advisement and will issue an order later. Notices of the hearing were sent by the commission to the nine other states in which the Missouri Pacific operates; to the Interstate Commission and the Senate and House committees on interstate commerce.

The Senate on April 17 passed the bill which had previously passed the House, H. R. 3141, to amend the provisions of section 20 of the interstate commerce act relating to bills of lading.

The Minneapolis Passenger Traffic Club held its ninth annual dinner on April 21. E. F. Flynn, assistant to the vice-president and general counsel of the Great Northern, was the principal speaker.

The Baltimore & Ohio and the Great Lakes Transit Corporation have made arrangements for the establishing of through lake-rail freight routes and rates between the East and the West by way of Buffalo, N. Y.

The new station of the Nashville, Chattanooga & St. Louis, at Forsyth street, Atlanta, Ga., was opened for use on April 18. The viaduct leading to the entrance of the building is not yet open, except for pedestrians, and vehicles must temporarily approach the station by the Spring street entrance.

"Crates for Commercial Refrigerators" is the title of Bulletin No. 21 which has been issued by the Freight Container Bureau of the American Railway Association, 30 Vesey Street, New York City. This bulletin has been prepared in co-operation with the Commercial Refrigerator Manufacturers, (Grand Rapids, Mich.).

The Illinois Central has named its daylight train between Chicago and Fort Dodge, Iowa, the Sinnissippi, a name selected by the editor of the Rockford (Ill.) Register-Gazette. It is the twelfth passenger train to be named by the road in its effort to select names that are appropriate for the territory served.

"The Minnesotan"

The Chicago Great Western has re-named trains No. 1 and No. 2, formerly known as the Legionnaire, which operates between Chicago and the Twin Cities, the Minnesotan, and has reduced the running time northbound 1 hr. and 10 min. The northbound train now leaves Chicago at 8 p.m. instead of 6:30 p.m. and arrives in Minneapolis at 8:10 a.m. instead of 7:50 a.m. Sleeping cars for Rochester arrive at 7 a.m. as previously and those for Des Moines, Iowa, at 7:10 a.m. instead of 8:40 a.m. Returning, the train leaves Minneapolis at 7:45 p.m. as previously and arrives in Chicago at 8 a.m. instead of 8:15 a.m.

Dining Cars for the Multitude

The Delaware, Lackawanna & Western announces the introduction of coaches on some of its through trains in which there are four tables, one on each side, at each end, which can be used by parties of passengers desiring to eat their luncheons together; passengers may bring their own

food or may buy sandwiches, pie and coffee from dining car waiters who will pass through the train. The tables are 38 in. square and are termed "permanent"; and they are to be provided in smoking cars as well as other coaches. At other than meal times, the tables will be available for use in playing games or as writing tables.

Proposed National Passenger Club

The Passenger Club of New Orleans has originated and is sponsoring a movement to join the hundred or more passenger clubs in America in a national organization. The idea was developed at a meeting at New Orleans on April 7, at which A. P. Hardy, city ticket agent of the Southern Pacific Lines at New Orleans, was appointed a committee of one to solicit the various passenger clubs of the country regarding the proposed organization, to be called the Associated Passenger Clubs of America. The Passenger Club of New Orleans is composed of employees of steam railroads, steamship companies, electric railroads, the Pullman Company and officers of the New Orleans Transfer Company.

Proposal to Require Separate Statement of Port Terminal Charges

The House committee on interstate and foreign commerce held a hearing on April 22 and 23 on a bill introduced by Representative McDuffie, of Alabama, to require the commission to make a separate valuation of terminal facilities used in connection with water traffic in export, import, coastwise or inland trade, and to require a separate charge for port terminal services based on cost plus a reasonable return on the value of the facilities. This represents an effort to re-open a controversy as to port accessorial charges which has been before the commission but in which it held it would not be in the public interest to require such separation. Representatives of the American Warehousemen's Association and of the owners of public and private terminal facilities at various ports appeared in support of the bill, while the Interstate Commerce Commission, through Commissioner Eastman, expressed the conclusion that this is a matter of such complexity that it would be very difficult if not impossible to cover it by legislation. Representatives of some of the owners of port terminal facilities object to the fact that railroads often absorb such expense in their line-haul rates, which they say makes it difficult for them to obtain adequate revenue.

Proposed Port Arthur-Baumont Line Opposed

Conversion of the Eastern Texas Electric interurban line into a steam railroad for the movement of freight between

Port Arthur, Tex., and Beaumont, 20 miles, as proposed by the Missouri Pacific and the Atchison, Topeka & Santa Fe, was opposed by the Kansas City Southern and the Southern Pacific at an Interstate Commerce Commission hearing before Examiner H. C. Davis at Port Arthur on April 15. Charles E. Johnston, president of the Kansas City Southern, declared that the entry of the two roads into Port Arthur would divert an annual revenue of \$3,900,000 from the Kansas City Southern and the Southern Pacific, the only steam roads which now serve that city. These two roads are capable of handling 50 per cent more traffic than now originates in the district south of Beaumont, he said. Reconstruction of the line would constitute a duplication of service. The plans for the new road do not include development of port facilities, and the investment made by the Kansas City Southern in the harbor is entitled to reasonable protection.

The Santa Fe and the Missouri Pacific have organized the Sabine Basin Railroad for the purpose of acquiring and reconstructing the interurban line. H. R. Safford, vice-president of the Missouri Pacific, argued that Southwest Texas and the Middle west would benefit from the project through competition in that territory, and a resulting stimulation of business. R. C. Duff, president of the Waco, Beaumont, Trinity & Sabine, which plans the construction of a line into Port Arthur, presented two motions for the dismissal of the Sabine Basin application, which were overruled by Examiner Davis.

* * *



Statue of Samuel Rea

As described in the *Railway Age* of April 12, this statue, a memorial to Mr. Rea's work in extending the Pennsylvania under the Hudson river and into New York City, was unveiled in the Pennsylvania station in New York on April 9, in the presence of officers of the road and invited guests.

Equipment and Supplies

Locomotives

THE CHICAGO GREAT WESTERN is inquiring for 15 locomotives of the 2-10-4 type.

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA has ordered three locomotives of the 4-6-2 type from the American Locomotive Company. These locomotives will have 25 in. by 28 in. cylinders and a total weight of approximately 350,000 lb. Inquiry for this equipment was reported in the *Railway Age* of March 29.

Freight Cars

THE ERIE has ordered 25 caboose cars from the Magor Car Corporation.

THE ERIE is inquiring for 50 low side gondola cars of 70 tons' capacity.

THE WESTERN ELECTRIC COMPANY is inquiring for from five to fifteen flat cars of 100 tons' capacity.

THE CHICAGO & NORTH WESTERN is inquiring for 10 flat cars of 70 tons' capacity.

THE FRUIT GROWERS' EXPRESS is inquiring for 366 steel underframes for refrigerator cars.

THE OLIVER IRON MINING COMPANY, Duluth, Minn., has ordered ten 30-yd. 75-ton air dump cars from the Koppel Industrial Car & Equipment Company.

THE UNION PACIFIC has ordered 300 underframes from the Bettendorf Company for flat cars to be built in its own shops. Inquiry for this equipment was reported in the *Railway Age* of April 19.

THE NORTHERN PACIFIC has ordered 250 stock cars from the Ryan Car Company. Inquiry for steel underframes for these cars was reported in the *Railway Age* of March 8.

THE CANADIAN PACIFIC has ordered 50 ore cars of 80 tons' capacity from the Eastern Car Company. Inquiry for these cars, which are for use in western Canada, was reported in the *Railway Age* of February 15.

THE VIRGINIAN has given a contract to the Virginia Bridge & Iron Company for rebuilding 500 hopper cars of 55 tons' capacity. It was reported in the *Railway Age* of April 5 that the Virginian was asking for bids on this work.

THE L. C. L. CORPORATION has ordered 100 drop side, 55-ton gondola cars, each equipped to carry six freight containers, from the Butler, Pa., works of the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of April 5.

THE ST. LOUIS-SAN FRANCISCO is now building at its Yale, (Memphis) Tenn., shop, at the rate of five per day, the

300 gondola cars which were reported in the *Railway Age* of November 30, 1929, and of January 4 as having been ordered in the company shops. In addition, repairs are being made to 212 gondola cars.

Passenger Cars

THE ERIE is inquiring for 20 suburban coaches.

THE NEW YORK CENTRAL has ordered one 73-ft. gas-electric rail motor car for Sperry rail fissure detector equipment from the J. G. Brill Company.

THE CANADIAN NATIONAL has ordered five baggage cars from the National Steel Car Corporation. This is in addition to an order for 20 baggage cars from the same builder reported in the *Railway Age* of December 21, 1929.

Iron and Steel

THE DAYTON, OHIO, UNION TERMINAL COMPANY, is inquiring for 8,000 tons of structural steel for track elevation work.

Signaling

THE TEXAS & PACIFIC has ordered from the General Railway Signal Company material for automatic block signals at Shreveport (La.) yard. Color-light signals, type SA, will be used.

THE MISSOURI-KANSAS-TEXAS has ordered from the Union Switch & Signal Company 11 color-light signals and other material for use in the extension of automatic block signaling in the vicinity of San Antonio, Tex.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered from the Union Switch & Signal Company materials for an electro-mechanical interlocking at the crossing of the Baltimore & Ohio at Painesville, Ohio; 28 mechanical levers and three electric.

THE ST. LOUIS-SAN FRANCISCO has ordered from the Union Switch & Signal Company materials for the installation of automatic block signals on its line between St. Louis, Mo., and Cape Girardeau, 131 miles, single track. The signals will be semaphore, style S.

Centralized Control on Delaware & Hudson

The Delaware & Hudson has ordered from the General Railway Signal Company material for the installation of centralized traffic control on its line from Lanesboro, Pa., to Center Village, N. Y., eight miles single track, and six miles double. The control machine will be situated at Windsor, N. Y., midway between the termini. The system will control 26 existing automatic block signals, and will eliminate four interlockings at four ends of double track. The order includes 16 color-light signals, type SA.

Supply Trade

R. C. Bird has been appointed sales engineer of the **Chicago Steel Foundry Company**.

The **Universal Draft Gear Attachment Company** has moved its office to 332 South Michigan avenue, Chicago.

The **Chain Belt Company**, Milwaukee, Wis., has moved its New York City office from 50 Church street to the Chrysler building, 405 Lexington avenue.

The **Union Asbestos & Rubber Company** has moved its eastern sales office from 30 Church street to 70 East Forty-fifth street, New York.

Joseph V. McMullan, district sales manager of the **Naylor Pipe Company**, Chicago, with headquarters at 3116 Chrysler Building, New York, has also been appointed foreign sales manager.

William T. Kyle, general sales manager of the **Page Steel & Wire Company**, has resigned to become president of the **Welding Engineering & Research Corporation**, New York.

At the recent annual meeting of the **Timken Roller Bearing Company**, Canton, Ohio, **R. C. Brower** was elected secretary-treasurer, **J. A. Riley**, assistant treasurer and **Henry H. Timken, Jr.**, a director. The other officers and directors were re-elected.

Thomas H. Symington has severed his connections with **T. H. Symington & Son, Inc.**, Baltimore, Md., and on May 1 becomes associated with the **Gould Coupler Company** as assistant to the president with headquarters at New York.

The **General Refractories Company** has appointed the **Harry N. Crowder, Jr., Company**, Easton, Pa., as their exclusive representative for sales of high temperature cement in Lehigh and Northampton counties, Pa., and adjacent parts of New Jersey.

The offices of the **Chicago Committee on Car Service** of the Car Service division of the American Railway Association have been moved to the Buckingham building, 59 East Van Buren street, Chicago, where the offices of the American Railway Association are already located.

At the annual meeting of **Poor & Company**, Chicago, on April 22, **V. C. Armstrong**, president of the Rail Joint Company, was elected vice-president of the former company and **David J. Evans** and **Judson F. Stone** were elected directors to succeed **H. C. Lutkin** and **H. L. Baylies**.

The **General Pneumatic Tool Corporation**, Chicago, has been organized to sell spray painting equipment. **Mortimer Sullivan**, formerly vice-president and general manager of the **Binks Spray Equipment Company**, Chicago, has been

elected president and **Gerard Hale**, formerly sales manager of the **Binks Spray Equipment Company**, has been elected vice-president.

The **Lincoln Electric Company**, Cleveland, Ohio, has announced the transfer of three men from its manufacturing division to its welder service division, as follows: **John C. Ardagh**, Chicago district, with headquarters at Chicago; **R. A. Kyle**, New York district, with headquarters at New York, and **Robert Newton**, Cleveland district, with headquarters at Cleveland.

The **Republic Research Corporation**, Massillon, Ohio, has been incorporated by the Republic Steel Corporation as a specialized research division devoted to the development of improved products and processes. The facilities for steel research which exist at Massillon will be enlarged. **F. J. Griffiths**, formerly chairman of the board of the Central Alloy Steel Corporation, has been elected president of the new organization.

At a meeting of the board of directors of **W. H. Miner, Inc.**, on April 19, **A. T. Withall**, manager of sales, was elected president of the corporation and **G. A. Johnson**, chief mechanical engineer, was elected senior vice-president. **W. H. Miner**, founder and for 30 years the head of the railway supply business which bears his name, made provision during his lifetime by which the officers and older members of the company would continue the business and participate in its earnings.

A meeting of shareholders is to be held in Montreal, Que., on May 14 to consider and approve a plan for the consolidation of the **British Empire Steel Corporation**, the **Dominion Steel Corporation** and the **Dominion Iron & Steel Company**. All of these companies, located in the Cape Breton area of Nova Scotia, are to be operated under one company which will be known as the **Dominion Steel & Coal Corporation**. The plan involves the purchase of the physical assets of the three companies by the new company by division of its class B shares among stockholders of the three present companies.

W. S. Rugg, vice-president in charge of engineering of the **Westinghouse Electric & Manufacturing Company**, has been placed in charge of sales activities, in addition to his engineering duties, according to an announcement by **F. A. Merrick**, president. Mr. Rugg, by this appointment, takes over the duties of **Edward D. Kilburn**, vice-president and general sales manager, who resigned on April 16 to engage in private business in New York. **S. M. Kintner**, director of the **Westinghouse Research Laboratory**, has been made assistant vice-presi-

dent, assuming engineering department duties under Mr. Rugg's direction.

The **Standard Steel Works Company** has moved its general offices from Philadelphia to its plant at Burnham, Pa. **Frank K. Metzger**, formerly vice-president in charge of sales, has been appointed vice-president and general manager, succeeding **O. C. Skinner** as general manager. **R. Nevin Watt** has been appointed sales manager, and **G. H. Lewis**, works manager, all with headquarters at Burnham. A district office has been established at Philadelphia in charge of **H. J. Snowden**, formerly connected with the St. Louis office of the company. Mr. Snowden will be assisted by **M. H. McCurdy**, who has been transferred from Portland, Ore.

The **General Cable Corporation** has reorganized its district sales offices and established 18 district and territorial offices, as follows:

Manager	District	Headquarters
A. D. Stein	New England	Boston, Mass.
O. G. Miller	Northern	New York
M. E. Damon	Rome	Rome, N. Y.
N. C. Osthoff	Buffalo	Buffalo, N. Y.
F. O. Hoyt	Philadelphia	Philadelphia, Pa.
H. G. Richardson	Washington	Washington, D. C.
R. A. Gray	Pittsburgh	Pittsburgh, Pa.
K. D. Clothier	Cincinnati	Cincinnati, Ohio
C. R. Evans	Northern Ohio	Cleveland, Ohio
E. W. Kearns	Central	Chicago, Ill.
F. B. Nimmo	Minneapolis	Minneapolis, Minn.
H. C. Wilder	Southern	Birmingham, Ala.
M. L. Tice	Birmingham	Birmingham, Ala.
J. A. Peacock	Atlanta	Atlanta, Ga.
W. D. Hampton	Charlotte	Charlotte, N. C.
A. Z. Barnes	Dallas	Dallas, Tex.
E. H. Shutt	South Central	St. Louis, Mo.
B. E. Dolch	Kansas City	Kansas City, Mo.
W. A. Cravens	Lake	Detroit, Mich.
J. G. Harris	Mountain	Denver, Colo.
C. G. Gauntlett	Pacific Coast	San Francisco, Cal.
W. G. Stearns	San Francisco	San Francisco, Cal.
C. A. Brown	Seattle	Seattle, Wash.

Resident engineers will be located in the district and territorial sales offices. The following divisional district managers function as heretofore in the Metropolitan district, with headquarters at New York City: **Dudlo Manufacturing Company**, **F. H. Phillips**; **Rome Wire Company**, **H. A. Hammond**; **Safety Cable Company**, **H. F. Hagerty**, and **Standard Underground Cable Company**, **R. S. Hopkins**.

The **Republic Steel Corporation** is the name chosen for the company resulting from the merger of the **Republic Iron & Steel Company**, the **Central Alloy Steel Corporation**, the **Donner Steel Company, Inc.**, and the **Bourne-Fuller Company**. The officers of the new company are as follows: Chairman of the board, **Tom Girder**, a member of the advisory committee of **Continental Shares, Inc.**, Cleveland; president, **Elmer T. McCleary**, president of the **Republic Iron & Steel Company**; first vice-president, **Benjamin F. Fairless**, president and general manager of the **Central Alloy Steel Company**; vice-president in charge of sales, **Harry T. Gilbert**, a vice-president and director of **Republic**; vice-president in charge of operations, **R. J. Wysor** of **Continental Shares** and a director of **Donner**; vice-

president **Rollin S. Hall**, president of Bourne-Fuller; vice-president, **William T. Witherow**, president of the Witherow Steel Corporation; secretary, **Richard Jones, Jr.**, secretary of Republic; treasurer, **John J. Anderson**, treasurer of Republic, and assistant vice-president in charge of sales, **Alex E. Walker**, assistant general sales manager of Republic. **J. M. Schlendorf**, vice-president in charge of sales of the Central Alloy Steel Company, has been appointed sales manager of alloy steel products of the Republic Steel Corporation, and **Norman Foy**, Birmingham district manager in the old Republic organization, becomes sales manager of mild steel products, with headquarters at Youngstown, Ohio.

A. I. Findley Relinquishes Editorial Direction of Iron Age

Alvin Irwin Findley has resigned as editor of the Iron Age but will continue with the publication as editor emeritus. His journalistic career extends back a half a century, of which the past 38 years have been devoted to industrial journalism. He has been identified with the Iron Age since 1905 and during most of that time has carried the responsibilities of editorial direction. He was the first president of the National Conference of Business Paper Editors in 1919-1920. His school training included both literary and scientific courses at Buchtel College (now Akron University) at Akron, Ohio, and the College of



Alvin Irwin Findley

Wooster at Wooster, Ohio. He was editor of the Akron Daily Beacon from 1883 to 1890. In 1892 he became editor of Iron Trade Review, Cleveland, and vice-president of the Iron Trade Review Company. He continued as editor of Iron Trade Review until 1905, when he joined the Iron Age organization. In addition to serving as editor-in-chief, Mr. Findley has been, and continues to be, a director of the United Business Publishers, Inc. He has contributed many articles to magazines and newspapers on technical and economic problems in the metal-working industry. He is a member of a number of metallurgical societies and in 1902 served as vice-president of the American Foundry-

men's Association. William W. Macon, who has been associated with Mr. Findley for 19 years on the editorial staff of the Iron Age, has been appointed to succeed Mr. Findley as its editor-in-chief. Mr. Macon has been managing editor for the past 12 years. Gilbert L. Lacher and Clarence E. Wright, associate editors for the past four years, have been appointed managing editor and news editor, respectively.

Safety Car Heating and Lighting Company

Net earnings of \$1,186,366, after depreciation and taxes, were reported by the Safety Car Heating & Lighting Company for the year ending December 31, 1929, according to the annual report issued on April 21. This amount is equivalent to \$12.03 a share on the 98,620 shares of common stock outstanding and compares with a 1928 net of \$1,045,376, equal to \$10.60 a share. After regular dividends of \$8 and an extra dividend of \$2 per share, making a total disbursement of \$986,200, the same as in 1928, there remained a surplus for the year of \$200,166. This figure compares with a surplus after dividends of \$59,176 in the previous year. The consolidated balance sheet of the Safety Car Heating & Lighting Company and its subsidiaries as of December 31, 1929, compared with the corresponding statement for 1928, is as follows:

	1929	1928
Assets		
Cash	\$740,377	\$373,627
Loans and notes receivable and accrued interest	1,607,079	1,612,301
Accounts receivable ..	924,409	813,634
Inventories	1,596,426	1,688,427
Investments	2,200	200
Real estate, machinery, etc., after depreciation and other charges	9,805,094	10,050,033
Deferred charges	336,674	217,155
	\$15,012,259	\$14,755,376
Liabilities		
Accounts payable	\$209,125	\$200,088
Reserves for taxes and contingencies	242,487	194,806
Capital Stock	9,862,000	9,862,000
Surplus	4,698,647	4,498,482
	\$15,012,259	\$14,755,376

Obituary

E. T. McCleary, newly elected president of the Republic Steel Corporation, died at Youngstown, Ohio, on April 22 after undergoing an operation.

Trade Publication

SHOVELS, CRANES, HOISTS AND DERRICKS.—"Quality Engineering" is the title of a 19-page, illustrated booklet recently issued by the American Hoist & Derrick Co., St. Paul, Minn. It lists the qualities of the various equipment manufactured by this company and describes the different applications of the "Gopher," which may be converted into a shovel, clamshell or a dragline. In addition, electric and gasoline hoists are described, as also is the American locomotive crane.

Construction

BALTIMORE & OHIO.—This company is installing second track between Barton, Ohio, and Maynard, a distance of about five miles, and laying additional side tracks and lengthening enginehouse stalls at other points on its 260-mile line from Fairmont, W. Va., to Lorain, Ohio, at a total cost of approximately \$2,100,000. These projects are the final steps in a general improvement program, which involved the reconstruction of 63 bridges and the installation of five 115-ft. turntables, undertaken to permit the operation of heavier motive power on the Fairmont-Lorain line.

BOSTON & ALBANY.—This company plans the installation of color light signals to replace existing semaphore signals between Brookline Junction, Mass., and Natick, approximately 15 miles, at a cost of about \$150,000.

BOSTON & MAINE.—Various plans for the proposed elimination of the Rotterdam Junction-Pattersonville county highway crossing, Schenectady, N. Y., and for the elimination of the Northern turnpike county highway crossing in Hoosick, N. Y., are under consideration by the railroad and the Public Service Commission of New York. Further hearings on the proposed eliminations will be held by the Commission on June 3.

CANADIAN NATIONAL.—This company has asked for bids for the clearing of right of way grading and installation of culverts for the construction of the bulwark easterly branch about 25 miles in length in Alberta. Bids have also been received for fencing on the Melfort-Abertown branch in Saskatchewan involving approximately 128 fence miles.

CANADIAN NATIONAL (Hudson Bay).—The Canadian government plans to award a contract for the construction of a 2,500,000-bu. grain elevator at Churchill, Man., about May 15. T. A. Crerar, minister of railways and canals, stated at Winnipeg, Man., on April 16.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract has been let to Peterson, Shirley & Gunther of Omaha, Neb., for the construction of sections six and seven between Moseby, Mo., and Birmingham about 13 miles of the joint double track line being constructed by this company and the Chicago, Rock Island & Pacific between Polo, Mo., and Birmingham as a part of a new entrance into Kansas City, Mo., from the north. This contract includes about 1,500,000 cu. yd. of earth and about 200,000 cu. yd. of rock excavation. Bids will be closed on April 28 for the concrete and bridge work on sections six and seven involving the placing of 7,000 cu. yd. of concrete.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the Winston Brothers Company, Minneapolis, Minn.,

for the construction of Section 4, seven miles, of the joint double-track line with the Chicago, Milwaukee, St. Paul & Pacific into Kansas City, Mo., between Polo, Mo., and Birmingham.

DELAWARE & HUDSON.—This company has been advised by the Public Service Commission of New York that it does not consider as excessive the low bid of \$62,309 submitted by F. W. Clement & Company, Bethlehem, Pa., for work in connection with the elimination of the Duanesburg-Esperance county highway and the station and MacDougall crossings in Duanesburg, N. Y.

DELAWARE, LACKAWANNA & WESTERN.—This company has been authorized by the Public Service Commission of New York to award to the Porterfield-Binger Construction Company, Youngstown, Ohio, the contract for the elimination of a grade crossing on the LaFayette-Tully highway (state highway No. 5516), Tully, N. Y. The work involves approximately 28,000 cu. yd. of excavation and the placing of 3,000 cu. yd. of reinforced concrete and 7,000 lin. ft. of piling.

GRAND TRUNK WESTERN.—This company has asked for bids for the construction of a three-story reinforced concrete frame and brick express and office building with basement garage at Pontiac, Mich.

GREAT NORTHERN.—A contract for the construction of five electric cinder-handling plants, two of which are for multiple track operation, at Williston, N. D., Brockton, Mont., Glasgow, Wagner and Helena, has been let to the Roberts & Schaefer Company, Chicago.

GREAT NORTHERN.—Bids were closed on April 21 for the construction of an extension to the roundhouse at Duluth, Minn., at a cost of \$85,000. A contract for replacing the end bases of the St. Louis bay bridge at Duluth—Superior, Minn., and renewing the timber center pier at a cost of \$32,000 has been let to Peppard & Fulton, Minneapolis, Minn. A contract has been awarded to the Minneapolis Steel & Machinery Company, Minneapolis, and the Howlett Construction Company, Moline, Ill., for the construction of a coal dock sand house and accompanying facilities at Sand Point, Idaho, at an approximate cost of \$50,000.

LONGVIEW, PORTLAND & NORTHERN.—A contract for a 90,000-cu. yd. fill which will replace a timber trestle near Castle Rock, Wash., has been let to Henry Niblet, Longview, Wash.

NEW YORK, CHICAGO & ST. LOUIS.—This company has awarded several contracts for the construction of a farmers-growers market in the Food Terminal area at Cleveland, Ohio, at a cost of about \$45,000. A contract for the construction of the substructure of the East 79th street bridge at Cleveland at a cost of \$37,300 and of the bridge deck for the produce lead track at the same point at a cost of \$36,700 has been let to the Industrial Construction Company, St. Louis, Mo. The construction of the bridge decks at East 105th street, Cleveland, will be undertaken by Freeman & Jones at a cost

of approximately \$25,100, while the contract for the construction of the substructure of the East Ninety-fifth street bridge, Cleveland, has been awarded to the Speaker Construction Company at a cost of \$44,900.

NORTHERN ALBERTA.—A contract for the construction of an extension from Fairview, Alta., west 15 miles, has been awarded to Stewart, Grant & Mannix, Calgary, Alta. A contract has been let to Roosa & Wickstrand, Vermillion, Alta., for the construction of a line from Hythe, Alta., to Rolla, 50 miles.

PENNSYLVANIA.—This company has reached an agreement with the Track Elevation committee of the Chicago city council for the elevation of its connection between the main lines of the Pittsburgh, Cincinnati, Chicago & St. Louis and the Pittsburgh, Ft. Wayne & Chicago between Fifty-eighth and Fifty-ninth streets, Chicago, from the former line to Morgan street, about 8,000 ft. The cost of the elevation, including 24 street subways is estimated at \$3,000,000.

PENNSYLVANIA.—A contract has been awarded to the James McGraw Company, Philadelphia, Pa., at a cost of approximately \$109,000, for the construction of a bridge under the Reading Company's tracks, tracklaying, etc., in connection with the elimination of a grade crossing at Paxton and Second streets, Harrisburg, Pa. In co-operation with other railroads entering Louisville, Ky., the Pennsylvania has prepared plans for a \$5,000,000 grade separation project, which is to be undertaken in the near future. The plans, as submitted by Pennsylvania engineers, call for track elevation by means of a dirt fill with concrete retaining walls and the depression of Main, Market, Jefferson, Walnut, Chestnut and Twelfth streets and Broadway in the western part of the city. The cost of the work is to be divided among the various railroads involved, which will pay 65 per cent of the total cost, and the city, which is to pay 35 per cent.

PITTSBURGH & LAKE ERIE.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the furnishing of an electric engine coaler and cinder-handling plant at Pittsburgh, Pa.

RICHMOND, FREDERICKSBURG & POTOMAC.—This company has authorized the construction of or extensions and additions to five passing sidings at various points on its lines, at an estimated total cost of \$102,000, and the construction of an electro-pneumatic interlocking plant to replace an existing electro-mechanical interlocking at an estimated cost of \$60,000.

ST. LOUIS-SAN FRANCISCO-CHICAGO. ROCK ISLAND & PACIFIC.—The Interstate Commerce Commission has authorized the construction by subsidiaries of these two companies of 150 miles of new line in Texas, which, together with the acquisition of control of the Gulf, Texas & Western by the Frisco and the use of trackage rights, will build up a new

shorter route from northern Texas and southwestern Oklahoma to Fort Worth and Dallas, Tex. The St. Louis, San Francisco & Texas was authorized to build a line from Vernon, Tex., to a connection with the G. T. & W. at Seymour, 42 miles, and to operate under trackage rights over the line of the Chicago, Rock Island & Gulf between Jacksboro and Fort Worth, 71.6 miles. The Chicago, Rock Island & Gulf was also authorized to build a line from Shamrock to a point near Quanah, Tex., and from Quanah southeasterly to a connection with the proposed Vernon-Seymour line of the St. Louis, San Francisco & Texas at Beaver Creek, 108 miles, and to operate under trackage rights over the line of the St. L., S. F. & T. between Quanah and the point of connection of the proposed line, over the proposed Vernon-Seymour line; and over the line of the G. T. & W. between Seymour and Jacksboro. The St. L., S. F. & T., was also authorized to operate over the line to be constructed by the C. R. I. & G. between Quanah and Beaver Creek. The Clinton-Oklahoma Western, a subsidiary of the Santa Fe, was authorized to build from Heaton to a point north of the north fork of the Red river, 8.7 miles, in Gray county, Tex. The application of the Fort Worth & Denver Northern, a subsidiary of the Burlington system, for authority to construct a line from Childress to Pampa, Tex., 110 miles, was denied.

SOUTHERN PACIFIC.—A contract has been awarded to Lewis & Green, San Francisco, Cal., for the construction of a one-story brick and concrete passenger and freight station at Stockton, Cal., at a cost of approximately \$200,000.

SOUTHERN PACIFIC (Texas and Louisiana Lines).—The War department has approved the plans of this company for the construction of a combined railway and highway bridge over the Louisiana and Texas Intercoastal waterway near Houma, La.

TULSA UNION DEPOT.—A contract has been let to Reid & Lowe, Birmingham, Ala., for the lowering and reconstruction of tracks in connection with the new union station facilities at Tulsa, Okla.

UNION PACIFIC.—A contract has been let to the Mead & Mount Construction Company, Denver, Colo., for the construction of a one-story passenger station at Greeley, Colo., which will have outside dimensions of 42 ft. by 162 ft. The building will be constructed of brick with terra cotta trim. The interior will be texture plastered with exposed roof trusses and purlins in the waiting room, while the grounds will be landscaped. The total cost of the project will be about \$100,000.

YANKTON, NORFOLK & SOUTHERN.—This company, which it is proposed to incorporate in Colorado, plans the construction of a railroad between Rifle, Colo., on the Denver & Rio Grande Western, and Meeker, 34 miles, to reach a bituminous coal deposit in the vicinity of the latter point.

Railway Finance

BOSTON & MAINE.—Bonds.—The Interstate Commerce Commission has authorized an issue of \$15,000,000 of first mortgage 5 per cent bonds, to be sold at not less than 98 and interest, the proceeds to be used to reimburse the treasury and to provide for capital expenditures in 1930.

CHESAPEAKE & OHIO. — Equipment Trust Certificates.—This company has applied to the Interstate Commerce Commission for authority for an issue of \$19,800,000 of 4½ per cent equipment trust certificates.

CHESAPEAKE & OHIO.—Stock Issue.—This company has applied to the Interstate Commerce Commission for authority to issue \$18,152,400 of additional common stock and to sell \$38,305,600 of common stock at par to its stockholders, one share for each four held. The proceeds are to be used to meet cash requirements during the year.

CHESAPEAKE & OHIO.—Unification Application Dismissed.—At the request of the company the Interstate Commerce Commission had dismissed the application filed last February for authority to acquire control of a system of lines in eastern territory.

CHICAGO GREAT WESTERN.—Notes.—The Interstate Commerce Commission has authorized this company to issue \$1,291,200 of promissory notes to the Lima Locomotive Works in part payment for fifteen 2-10-4 locomotives. The notes will mature in installments up to 1935 and bear 5½ per cent interest.

CHICAGO GREAT WESTERN.—Annual Report.—The 1929 annual report of this company shows net income after interest and other charges of \$1,235,880, as compared with net income of \$907,812, in 1928. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	1,495.27	1,495.27	
RAILWAY OPERATING REVENUES ..	25,825,337	24,871,023	+954,313
Maintenance of way	3,406,912	3,294,815	+112,097
Maintenance of Equipment	4,372,253	4,357,831	+14,422
Transportation	10,279,126	9,969,368	+309,758
TOTAL OPERATING EXPENSES	19,867,072	19,426,521	+440,551
Operating ratio	76.93	78.11	— 1.18
NET REVENUE FROM OPERATIONS	5,958,264	5,444,502	+513,762
Railway tax accruals	1,099,203	1,076,255	+22,948
Railway operating income	4,855,790	4,364,400	+491,390
Hire of freight cars	1,084,202	874,956	+209,246
Joint Facility rents	885,271	879,445	+5,826
NET RAILWAY OPERATING INCOME	2,801,534	2,510,394	+291,141
Non-operating income	260,801	240,224	+20,578

	1929	1928	Increase or decrease
GROSS INCOME ..	3,062,336	2,750,617	+311,719
Rent for leased roads	77,690	78,540	— 849
Interest on funded debt ..	1,695,762	1,705,662	— 9,900
TOTAL DEDUCTIONS FROM GROSS INCOME	1,826,456	1,842,806	— 16,350
NET INCOME	1,235,880	907,812	+328,068

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—Abandonment.—The Interstate Commerce Commission has authorized this company to abandon that portion of its Running Water branch from Springfield, S. D., to Running Water, 6.7 miles.

DELAWARE & HUDSON.—Bonds.—Kuhn, Loeb & Co. and the First National Bank have purchased, subject to the approval of the Interstate Commerce Commission, \$10,000,000, this company's first and refunding mortgage 4 per cent gold bonds, due May 1, 1943, which they are offering at 93 per cent and accrued interest to yield about 4.73 per cent to maturity.

DENVER & SALT LAKE.—Annual Report.—The 1929 annual report of this road shows net income after interest and other charges, of \$610,068, as compared with net income of \$391,773, in 1928. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	232.34	235.87	— 3.53
RAILWAY OPERATING REVENUES ..	3,981,131	4,011,663	— 30,532
Maintenance of way	660,393	824,448	—164,055
Maintenance of Equipment	785,256	902,749	—117,492
Transportation	610,269	687,738	—77,470
TOTAL OPERATING EXPENSES	2,226,647	2,536,322	—309,675
NET REVENUE FROM OPERATIONS	1,754,484	1,475,341	+279,143
Railway tax accruals	156,447	131,570	+24,877
Hire of equipment—Net	81,337	84,770	— 3,433
NET RAILWAY OPERATING INCOME	1,679,287	1,428,412	+250,875
TOTAL OPERATING AND OTHER INCOME	1,821,471	1,554,489	+266,982
Rent for leased roads	393,409	343,940	+49,469
Interest on funded debt	810,000	810,000	
TOTAL DEDUCTIONS FROM GROSS INCOME	1,211,402	1,162,716	+48,686
NET INCOME	610,068	391,773	+218,295

ETTRICK.—Stock.—The Interstate Commerce Commission has authorized this company to issue \$15,000 of capital stock of which \$11,800 is to be delivered at par to organizers of the company which has taken over the property and the remainder sold for cash at not less than par to provide working capital.

FLORIDA EAST COAST.—Annual Report.—The 1929 annual report of this road

shows net deficit after interest and other charges of \$1,325,259, as compared with net deficit in 1928 of \$1,697,425. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	854.72	856.37	— 1.65
RAILWAY OPERATING REVENUES ..	13,446,015	13,874,723	—428,708
Maintenance of way	2,247,164	2,459,385	—212,221
Maintenance of Equipment	2,262,521	2,136,317	+126,204
Transportation	3,836,966	4,290,761	—453,795
TOTAL OPERATING EXPENSES	9,437,666	9,889,207	—451,541
Operating ratio	70.2	71.3	— 1.1
NET REVENUE FROM OPERATIONS	4,008,349	3,985,516	+22,833
Railway tax accruals	1,544,865	1,749,447	—204,581
Railway operating income	2,401,336	2,196,763	+204,573
Hire of Equipment—Net Dr.	707,504	729,575	—22,071
Joint Facility rents—Net Dr.	55,871	40,570	+15,301
NET RAILWAY OPERATING INCOME	1,637,961	1,426,619	+211,342
Other income	100,542	150,181	—49,639
GROSS INCOME ..	1,738,503	1,576,799	+161,703
Interest on funded debt ..	2,962,232	3,142,700	—180,468
TOTAL DEDUCTIONS FROM GROSS INCOME	3,063,762	3,274,224	—210,463
NET INCOME (deficit)	1,325,259	1,697,425	—372,166

GULF, MOBILE & NORTHERN.—Annual Report.—The 1929 annual report of this company shows net income after interest and other charges of \$1,071,399, as compared with net income in 1928 of \$956,527. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	733.92	733.88	+ .04
RAILWAY OPERATING REVENUES ..	7,631,222	7,510,350	+120,873
Maintenance of way	1,065,941	1,281,315	—215,374
Maintenance of Equipment	1,148,445	1,130,943	+17,502
Transportation	2,267,446	2,264,366	+3,080
TOTAL OPERATING EXPENSES	5,240,214	5,400,359	—160,145
NET REVENUE FROM OPERATIONS	2,391,008	2,109,991	+281,017
Railway tax accruals	512,950	368,838	+144,112
Railway operating income	1,876,396	1,739,644	+136,753
Equipment rents—Net	288,177	289,860	— 1,683
Joint Facility rents—Net	158,270	149,452	+8,818
NET RAILWAY OPERATING INCOME ..	1,429,950	1,300,332	+129,617
Non-operating income	42,115	284,361	—242,246
GROSS INCOME ..	1,472,064	1,584,694	—112,629
Rent for leased roads	237,550	237,550	
Interest on funded debt	370,000	370,000	
TOTAL DEDUCTIONS FROM GROSS INCOME	400,665	628,167	—227,502
NET INCOME	1,071,399	956,527	+114,873

GRAND TRUNK WESTERN.—Equipment Trust.—A syndicate headed by the Chase Securities Corporation is offering \$4,238,000 of this company's 5 per cent equip-

(Continued on page 1003)

Annual Reports

Chicago And North Western Railway Company

Report of the Board of Directors

To the Stockholders of the Chicago and North Western Railway Company:

The Board of Directors submits herewith its report of the operations and affairs of the Company for the year ending December 31, 1929.

Average mileage of road operated, 8,465.38.	
OPERATING REVENUES:	
Freight	\$112,029,702.20
Passenger	23,863,936.83
Other Transportation	15,497,379.26*
Incidental	3,341,929.14
	\$154,732,947.43
OPERATING EXPENSES:	
Maintenance of Way and Structures.....	\$ 22,000,106.93
Maintenance of Equipment	28,536,623.83
Traffic	2,650,107.21
Transportation	56,832,275.62
Miscellaneous Operations	1,158,959.63
General	4,634,700.91
Transportation for Investment—Cr.....Cr.	526,733.74
	115,286,040.39
Percentage of Expenses to Revenues	74.51
Net Revenue from Railway Operations.....	\$ 39,446,907.04
DEDUCTIONS FROM REVENUE:	
Railway Tax Accruals (6.62 per cent of Revenues)	\$ 10,238,843.71
Uncollectible Railway Revenues	17,621.88
Equipment Rents—Net	2,741,070.89
Joint Facility Rents—Net	229,221.10
	13,226,757.58
Net Railway Operating Income	\$ 26,220,149.46
NONOPERATING INCOME:	
Rental Income	\$ 698,252.74
Dividend Income	1,512,734.00
Income from Funded Securities.....	122,280.90
Income from Unfunded Securities and Accounts, and Other Items.....	858,099.45
	3,191,367.09
Gross Income	\$ 29,411,516.55
DEDUCTIONS FROM GROSS INCOME:	
Rental Payments	\$ 22,645.67
Interest on Funded Debt	13,612,067.13
Other Deductions	177,747.72
	13,812,460.52
Net Income	\$ 15,599,056.03
DIVIDENDS:	
7% on Preferred Stock	\$ 1,567,650.00
4½% on Common Stock	7,129,735.50
	8,697,385.50
Balance Income for the Year.....	\$ 6,901,670.53

* Includes \$1,349,492.99 Back Mail Pay for period May 9, 1925, to July 31, 1928.

General Remarks

During the year your company made additions and betterments, chargeable to capital account, in the amount of \$27,138,611.11. An analysis of this expenditure by accounts and various classes of property will be found in another part of this report under the heading of "Additions and Betterments."

Some of the more important work carried forward during the year was as follows:

The new gravity type classification yard for east-bound cars at the Proviso terminal was completed and placed in operation. This yard contains 59 tracks, having individual capacities from 38 to 76 cars each, and a total capacity of 3,220 cars, and an aggregate track length of 33.38 miles. The movement of cars into the classification tracks from the hump is controlled by 30 mechanically operated retarders. These retarders, located on leads to various tracks, together with the 58 switches connecting the yard tracks with the leads are operated from three elevated towers. A teletype communicating system was installed for transmitting switch lists prepared in the agent's office simultaneously to the hump Yardmaster's office, and to each of the three towers. The movement of trains approaching the hump are controlled by a series of signals operated by the Yardmaster. The yard is electrically lighted by flood lights of 1,000 watt capacity placed on four towers varying in height from 100 to 120 feet. A departure yard, operated in conjunction with the classification yard, contains 21 tracks having capacities varying from 60 to 100 cars each, with a total capacity of 1,760 cars, and a combined track length of 17 miles. A pneumatic tube 1¼ miles in length connects the agent's office with the departure yard for the purpose of transmitting outgoing waybills expeditiously. This facility was placed in service July first.

Other improvements completed at Proviso during the year are the extension of 10 stalls of the enginehouse 25 feet to provide 115 foot length stalls for housing Class "H" locomotives; two electrically operated mechanical cinder handling plants, one of three track capacity, and the other of four track capacity; a 110 foot turntable was installed replacing an 80 foot turntable; and a water softening plant was installed, and in conjunction therewith, a 500,000 gallon capacity reservoir was constructed.

Further progress was made in the elevation of tracks on the Mayfair cut-off, and the third and fourth track line just north of the Chicago River, in the City of Chicago, in the vicinity of the station Sauganash. This work is now substantially completed. On the Mayfair cut-off line one subway was constructed at Peterson Avenue, one street was vacated whereby two grade crossings were eliminated and four thousand feet of double track was elevated. On the third and fourth track line, subways were constructed at Peterson Avenue and Rogers Avenue, six thousand seven hundred feet of double track line was elevated and two grade crossings eliminated.

The work of separating the grades on the South Branch Line, in the City of Chicago, from Halsted Street, where the elevated tracks on this line previously ended, to the South Branch of the Chicago River, was commenced. In this connection, the grade crossing of the South Branch tracks with the tracks of the Pennsylvania Railroad and the Burlington Railroad, at Stewart Avenue, will be eliminated.

During the year the Company received and placed in service new equipment as follows:

LOCOMOTIVES:

35 Class "H" (4-8-4 type), weight on drivers 288,000 pounds, having tractive force available on drivers and booster combined of 76,500 pounds at 275 pounds steam pressure.

PASSENGER TRAIN CARS:

24 Passenger Coaches, equipped with roller bearings, capable of seating 98 passengers each, designed for suburban passenger service.
4 Combination Passenger-Baggage Cars of similar design for suburban service.
5 Combination Passenger-Baggage Cars for general passenger train service.
10 Baggage Cars 70-ft. in length.
10 Gasoline-Electric Self-propelled Passenger train Cars, of the following general description:
2 65-ft. All Passenger.
2 65-ft. Baggage and Mail.
2 75-ft. Passenger, Baggage and Mail.
1 75-ft. Passenger and Baggage.
3 75-ft. Baggage and Mail.

FREIGHT TRAIN CARS:

400 48-ft. 6-in., Steel Underframe, 70 ton capacity, Lowside Gondola Cars.
300 46-ft. Steel Underframe, 50 ton capacity Flat Cars.
200 All Steel, 50 ton capacity, Ballast Cars.
1,000 41-ft. 3-in. Steel Underframe and body, with wooden floor, 70 ton capacity, high side Gondola Cars.
500 40-ft. 6-in. Steel Underframe, 40 ton capacity Automobile Cars.
500 40-ft. 6-in. Steel Underframe, 40 ton capacity Automobile Cars, with end doors.
117 50-ft. Steel Underframe, 50 ton capacity Flat Cars.

In addition, the Company has rebuilt in its shops the following freight equipment:

871 40 Ton Steel Underframe Box Cars.
993 Steel Superstructure Box Cars.
807 50 Ton Gondola Cars.
291 Automobile Cars.
197 Refrigerator Cars.
100 Steel Underframe Caboose Cars.

3,259 Total Freight Cars of the classes named.

Additional equipment is being constructed, which will be delivered in 1930, as follows:

5 70-ft. All Steel Horse Cars, for use in passenger train service.
383 50-ft. Steel Underframe, 50 ton capacity Flat Cars.

Maintenance of Way and Structures

The total operating expenses of the company for the year ending December 31, 1929 were \$115,286,040; of this amount \$22,000,107 was for charges pertaining to the maintenance of way and structures. Included in these charges is a large part of the cost of 28,805 tons of new steel rail laid in 190 miles of track; 34,528 tons of usable rail in 262 miles of track; also the cost of 2,323,381 new track ties and 7,644,510 feet B. M., of new switch and bridge ties used in renewals. A total of 2,833,154 new tie plates were placed during the year.

The charges for maintenance of way and structures also include a substantial portion of the cost of ballasting 43.64 miles of double track line and 3.90 miles of single track line with

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stone ballast, 55.52 miles of double track and 325.96 miles of single track with gravel ballast, and 25.68 miles of single track with cinder ballast.

Twenty new steel bridges on masonry, and 22 steel bridges on pile supports, aggregating 3,070 feet in length, and containing 1,564.35 tons of steel, were constructed. The total length of wooden bridge structures replaced by permanent structures and embankment amounted to 8,882 feet.

Capital Stock

During the year the Company issued \$500.00 of Common Stock in exchange for a like amount of Common Stock Scrip, which had previously been issued pursuant to resolutions adopted by the Board of Directors and Stockholders, providing for the issue of Common Stock in exchange for the Preferred and Common Stocks of the Chicago, St. Paul, Minneapolis and Omaha Ry. Co.

The only other change during the year in the Capital Stock was the purchase by the Company of \$120.00 of its Common Stock Scrip.

During the year resolutions were adopted by the Board of Directors and Stockholders providing for an increase of the authorized Capital Stock of the Company from \$200,000,000.00 par value, to \$300,000,000.00 par value, by increasing the authorized Common Stock of the Company by \$100,000,000.00 par value. The following has been issued to December 31, 1929:

HELD BY THE PUBLIC:

Common Stock and Scrip.....\$158,444,795.25
Preferred Stock and Scrip.....22,395,120.00

Total Stock and Scrip held by the Public.....\$180,839,915.25

HELD IN TREASURY:

Common Stock and Scrip.....\$ 2,343,817.15
Preferred Stock and Scrip.....3,834.56

Total Stock and Scrip held in Treasury.....2,347,651.71
Total Capital Stock and Scrip, December 31, 1929.....\$183,187,566.96

Funded Debt

At the close of the preceding year, the amount of Funded Debt held by the Public was\$279,831,300.00

The above amount has been increased by Bonds and Equipment Trust Certificates sold during the year ending December 31, 1929, as follows:

C. & N. W. Ry. 20-year Convertible Gold Bonds, Series A, authorized at a special meeting of the stockholders held November 18, 1929, and sold for the following purposes:
For retirement of C. & N. W. Ry. bonds matured or maturing in 1930\$ 24,084,000.00
For reimbursement of Treasury for expenditures made for Additions and Betterments3,065,000.00
For advances to be made to the C. St. P. M. & O. Ry. Co. for retirement of its Funded Debt maturing in 1930 and to be secured by a like amount of C. St. P. M. & O. Ry. First Mortgage Gold Bonds of 1930 pledged as collateral.....45,186,000.00

\$ 72,335,000.00

Less amount due on \$2,060,000.00 of bonds sold on partial payment plan1,030,000.00

\$ 71,305,000.00

C. & N. W. Ry. General Mortgage Gold Bonds of 1927, 4½%, sold to reimburse the Company for expenditures made in redeeming underlying bonds.. 3,577,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1925, 4½%, Series "Q".... 3,971,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1927, 4½%, Series "V".... 4,950,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1929, 4½%, Series "W".... 3,825,000.00

Total Funded Debt Sold.....87,628,000.00

\$367,459,300.00

Total Funded Debt Redeemed.....16,362,900.00

Leaving Funded Debt held by the Public, December 31, 1929\$351,096,400.00

The net increase during the year in the Funded Debt held by the Public was \$71,265,100.00. Of this amount, \$15,000,000.00 was for the purpose of providing funds for the retirement of a like amount of C. & N. W. Ry. 10-Year Gold Notes, maturing June 1, 1930; \$45,186,000.00 was for the purpose of advancing to the Chicago, St. Paul, Minneapolis and Omaha Railway Company (of which Company's Capital Stock this Company owns 93.6%) funds for the retirement of Funded Debt maturing in 1930, to be secured by the pledge of a like amount of its First Mortgage Bonds; \$9,820,100.00 was due to \$12,746,000.00 Equipment Trust Certificates issued to cover 75% of the cost of new equipment acquired during the year, less \$2,925,900.00 such Certificates retired; and the balance, amounting to \$1,259,-

000.00, represents the net increase in the Funded Debt of the Company in addition to the foregoing transactions.

Lands

During the year ending December 31, 1929, 16,206.65 acres and 33 town lots of the Company's Land Grant lands were sold for the total consideration of \$195,317.00. The number of acres remaining in the several Grants December 31, 1929, amounted to 68,255.90 acres, of which 249.01 acres were under contract for sale, leaving unsold 68,006.89 acres.

Appended hereto may be found statements, accounts and statistics relating to the business of the fiscal year and the condition of the Company's affairs on December 31, 1929.

The Board gratefully acknowledges its appreciation of the loyal and efficient services rendered by officers and employees during the year.

By order of the Board of Directors.

FRED W. SARGENT,
President.

Chicago, April 1, 1930.

Comparative Statement of Income Account

	Year Ending Dec. 31, 1928	Year Ending Dec. 31, 1929	+ Increase or — Decrease
Average mileage of road operated	8,463.21	8,465.38	+ 2.17

OPERATING REVENUES:

Freight	\$111,417,795.55	\$112,029,702.20	+\$ 611,906.65
Passenger	23,579,049.77	23,863,936.83	+ 284,887.06
Other Transportation	14,077,173.78	15,497,379.26*	+ 1,420,205.48
Incidental	3,015,736.35	3,341,929.14	+ 326,192.79

Total Operating Revenues	\$152,089,755.45	\$154,732,947.43	+\$2,643,191.98
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OPERATING EXPENSES:

Maintenance of Way and Structures	\$ 23,461,938.70	\$ 22,000,106.93	—\$1,461,831.77
Maintenance of Equipment	28,382,395.24	28,536,623.83	+ 154,228.59
Traffic	3,049,508.60	2,650,107.21	— 399,401.39
Transportation	56,763,999.12	56,832,275.62	+ 68,276.50
Miscellaneous Operations	1,076,373.99	1,158,959.63	+ 82,585.64
General	4,435,318.56	4,634,700.91	+ 199,382.35
Transportation for Investment—Cr.	Cr. 530,626.10	Cr. 526,733.74	+ 3,892.36

Total Operating Expenses	\$116,638,908.11	\$115,286,040.39	—\$1,352,867.72
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Net Revenue from Railway Operations	\$ 35,450,847.34	\$ 39,446,907.04	+\$3,996,059.70
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DEDUCTIONS FROM REVENUE:

Railway Tax Accruals	\$ 9,608,224.72	\$ 10,238,843.71	+\$ 630,618.99
Uncollectible Railway Revenues	22,762.84	17,621.88	— 5,140.96
Equipment Rents—Net	2,360,748.21	2,741,070.89	+ 380,322.68
Joint Facility Rents—Net	233,428.66	229,221.10	— 4,207.56

Total Deductions	\$ 12,225,164.43	\$ 13,226,757.58	+\$1,001,593.15
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Net Railway Operating Income	\$ 23,225,682.91	\$ 26,220,149.46	+\$2,994,466.55
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* Includes \$1,349,492.99 Back Mail Pay for period May 9, 1925, to July 31, 1928.

NONOPERATING INCOME:

Rental Income	\$ 695,892.66	\$ 698,252.74	+\$ 2,360.08
Dividend Income	1,054,734.00	1,512,734.00	+ 458,000.00
Income from Funded Securities	55,049.38	122,280.90	+ 67,231.52
Income from Unfunded Securities and Accounts, and Other Items	539,487.97	858,099.45	+ 318,611.48

Total Nonoperating Income	\$ 2,345,164.01	\$ 3,191,367.09	+\$ 846,203.08
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Gross Income	\$ 25,570,846.92	\$ 29,411,516.55	+\$3,840,669.63
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DEDUCTIONS FROM GROSS INCOME:

Rental Payments	\$ 28,223.92	\$ 22,645.67	—\$ 5,578.25
Interest on Funded Debt	13,378,132.40	13,612,067.13	+ 233,934.73
Other Deductions	105,900.20	177,747.72	+ 71,847.52

Total Deductions	\$ 13,512,256.52	\$ 13,812,460.52	+\$ 300,204.00
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Net Income	\$ 12,058,590.40	\$ 15,599,056.03	+\$3,540,465.63
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DIVIDENDS:

On Preferred Stock (7%)	\$ 1,567,650.00	\$ 1,567,650.00
On Common Stock (4½%)	7,129,705.00	7,129,735.50	+\$ 30.50

Total Dividends	\$ 8,697,355.00	\$ 8,697,385.50	+\$ 30.50
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Balance Income for the Year, carried to Profit and Loss	\$ 3,361,235.40	\$ 6,901,670.53	+\$3,540,435.13
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Comparative General Balance Sheet (8,384.53 Miles)

December 31, 1928	ASSETS	December 31, 1929	December 31, 1928	LIABILITIES	December 31, 1929
	INVESTMENTS			CAPITAL STOCK	
\$541,120,306.28	Investment in Road and Equipment.....	\$562,523,169.98	\$180,840,035.25	Held by Public	\$180,839,915.25
814,612.72	Miscellaneous Physical Property.....	1,035,787.77	2,347,531.71	Held in Treasury	2,347,651.71
2,169,253.15	Investment in Affiliated Companies.....	2,416,453.15		Total Capital Stock.....	\$183,187,566.96
10,337,152.29	Investment in Other Companies:		\$183,187,566.96	Premium Realized on Capital Stock.....	29,657.75
	Capital Stock of Chicago, St. Paul, Minneapolis and Omaha Ry. Co. (149,200 Shares), acquired by purchase	10,337,152.29	\$183,217,224.71	Total Capital Stock and Premium.....	\$183,217,224.71
13,288,971.43	Capital Stock of Chicago, St. Paul, Minneapolis and Omaha Ry. Co. (130,060 Shares), acquired in exchange for C. & N. W. Ry. Co. Common Stock	13,288,971.43		LONG TERM DEBT	
3,910,575.93	Preferred Stock of Union Pacific Railroad Company (41,715 Shares).....	3,910,575.93	\$279,831,300.00	Funded Debt Held by the Public.....	\$351,096,400.00
16,222.50	Bonds of C. St. P. M. & O. Ry. Co., due in 1930	15,925,769.51	15,290,000.00	Funded Debt Held in Treasury and Due from Trustee:	
151,770.00	Miscellaneous	151,770.00	35,500,000.00	Unpledged	13,399,000.00
3,323,351.54	Other Investments	577,956.16	\$330,621,300.00	Pledged	35,500,000.00
\$575,132,215.84	Total Investments	\$610,167,606.22		Total Long Term Debt.....	\$399,995,400.00
	CURRENT ASSETS			CURRENT LIABILITIES	
\$ 5,864,662.89	Cash	\$ 51,833,195.34	\$ 4,326,265.28	Traffic and Car Service Balances Payable	\$ 4,415,803.93
14,500.00	Loans and Bills Receivable.....	2,518,500.00	5,261,602.48	Audited Accounts and Wages Payable...	9,025,290.23
753,665.33	Traffic and Car Service Balances Receivable	334,892.86	250,024.37	Miscellaneous Accounts Payable.....	246,590.46
2,756,795.98	Net Balance Receivable from Agents and Conductors	2,663,353.30	710,255.59	Interest Matured Unpaid.....	686,747.34
7,975,070.84	Miscellaneous Accounts Receivable.....	7,829,013.46	35,305.20	Dividends Matured Unpaid.....	46,808.70
12,064,384.32	Material and Supplies.....	11,684,629.53	2,250,306.61	Unmatured Interest Accrued.....	2,811,746.20
371,991.73	Other Current Assets.....	774,598.02	1,063,980.44	Other Current Liabilities.....	983,558.92
\$ 29,801,071.09	Total Current Assets.....	\$ 77,638,182.51	\$ 13,897,739.97	Total Current Liabilities.....	\$ 18,216,545.78
	UNADJUSTED DEBITS			UNADJUSTED CREDITS	
\$ 2,883.45	Advances account Equipment Purchased under Trust Agreements.....	\$ 5,056.68	\$ 7,152,960.00	Tax Liability	\$ 8,632,703.35
2,347,531.71	Capital Stock and Scrip, C. & N. W. Ry. Co., Held in Treasury	2,347,651.71	596,143.95	Premium on Funded Debt.....	567,668.95
15,290,000.00	Company Bonds Held in Treasury and Due from Trustee:	13,399,000.00	47,090,544.91	Accrued Depreciation—Equipment	49,462,032.75
35,500,000.00	Unpledged	35,500,000.00	3,710,351.07	Other Unadjusted Credits.....	1,407,479.40
2,376,778.79	Pledged	2,629,742.71	\$ 58,549,999.93	Total Unadjusted Credits.....	\$ 60,069,884.45
\$ 55,517,193.95	Other Unadjusted Debits.....	\$ 53,881,451.10		CORPORATE SURPLUS	
\$660,450,480.88	Total Assets	\$741,687,239.83	\$ 74,164,216.27	Additions to Property Through Surplus..	\$ 2,977,367.36
			\$660,450,480.88	Profit and Loss	77,210,817.53
				Total Corporate Surplus.....	\$ 80,188,184.89
				Total Liabilities	\$741,687,239.83

Chicago, Saint Paul, Minneapolis And Omaha Railway Company

Report of the Board of Directors

To the Stockholders of the Chicago, Saint Paul, Minneapolis and Omaha Railway Company:

The Board of Directors submits herewith its report of the operations and affairs of the Company for the year ended December 31, 1929.

Mileage of road operated, 1,746.53

OPERATING REVENUES:	
Freight	\$20,685,592.54
Passenger	4,023,441.62
Other Transportation	2,126,953.05*
Incidental	383,010.88
	\$27,218,998.09

OPERATING EXPENSES:	
Maintenance of Way and Structures.....	\$ 4,031,565.93
Maintenance of Equipment	4,978,404.00
Traffic	477,227.80
Transportation	11,451,794.20
Miscellaneous Operations	191,738.87
General	985,462.29
Transportation for Investment—Cr.....	46,953.34
	22,069,239.75
Percentage of Expenses to Revenue.....	81.08
Net Revenue from Railway Operations.....	\$ 5,149,758.34

* Includes \$232,856.04 Back Mail Pay, for period May 9, 1925, to July 31, 1928.

DEDUCTIONS FROM REVENUE:	
Railway Tax Accruals (4.92 per cent. of Revenues)	\$ 1,339,793.74
Uncollectible Railway Revenues	2,817.26
Equipment Rents—Net	424,104.52
Joint Facility Rents—Net	414,309.65
	2,181,025.17

Net Railway Operating Income	\$ 2,968,733.17
NONOPERATING INCOME:	
Rental Income	\$ 60,433.19
Dividend Income	37,432.40

Income from Funded Securities.....	5,603.12
Income from Unfunded Securities and Accounts, and Other Items	93,698.25
	197,166.96
Gross Income	\$ 3,165,900.13
DEDUCTIONS FROM GROSS INCOME:	
Rental Payments	\$ 1,841.15
Interest on Funded Debt.....	2,649,968.96
Other Deductions	237,454.23
	2,889,264.34
Net Income	\$ 276,635.79

General Remarks

Freight revenues for the year 1929 were characterized by a further increase of \$78,370.60 or .38 per cent., as compared with the preceding year. Contrary to the experience of the past few years, there was a general decrease in tonnage of products of agriculture transported, the per cent., of decrease for this group of commodities being 9.22. There was likewise a decrease, although smaller proportionately, in the tonnage of animals and products and products of forests, transported.

Products of mines produced an increase of 9.05 per cent., in tonnage handled, the increase in this class coming largely in bituminous coal. Manufactures and miscellaneous also contributed a slight increase in tons handled, but with an increase of 5.30 per cent., in revenue, as compared with the preceding year. The increases in agricultural implements and automobiles and auto trucks handled are noteworthy in this commodity group.

A further decrease of \$166,684.00 or 3.98 per cent., continued the decline of the preceding eight years in passenger revenues. This decrease was entirely attributable to the continuing loss in the "short haul" local business, the through traffic, in fact, producing an increase of \$41,627.31. As mentioned in the preceding report, a total of six gasoline-electric motor passenger cars

were in service on local runs by the latter part of 1929 with attendant reduction in operating cost of this service.

Mail revenues for the year 1929 include the sum of \$232,856.04 as back mail pay for the period May 9th, 1925, when application for an increase in compensation for carrying the mails was filed, to July 31st, 1928, when the increased rates allowed were placed into effect.

Operating expenses were reduced \$919,723.24 or 4.00 per cent., as compared with the year 1928. Charges for Maintenance of Way and Structures decreased \$847,092.23, while charges for Maintenance of Equipment decreased \$191,608.22. Further intensive effort in connection with Transportation produced a reduction in cost of train service of \$74,797.80 or 1.24 per cent., and in cost of yard service of \$15,479.09 or .66 per cent., as compared with the preceding year.

Funded Debt

At the close of the preceding year the amount of Funded Debt, held by the Public, was..... \$48,663,600.00

The above amount has been increased by Equipment Trust Certificates sold during the year ended December 31, 1929, as follows:

Chicago, Saint Paul, Minneapolis and Omaha Railway Equipment Trust Certificates of 1917, Series "G," 4 3/4 %	690,000.00
	\$49,353,600.00

And the above amount has been decreased during the year ended December 31, 1929, by Equipment Trust Certificates redeemed, as follows:

Chicago, Saint Paul, Minneapolis and Omaha Railway Equipment Gold Notes, 6%	\$156,800.00
Chicago, Saint Paul, Minneapolis and Omaha Railway Equipment Trust Certificates of 1917:	
Series "B," 7%	95,000.00
Series "C," 4 3/4 %	41,000.00
Series "D," 4 3/4 %	83,000.00
Series "E," 4 3/4 %	48,000.00
Series "F," 4 3/4 %	54,000.00
Series "G," 4 3/4 %	69,000.00

Total Funded Debt Redeemed..... 546,800.00

Leaving Funded Debt held by the Public, December 31, 1929 \$48,806,800.00

First Mortgage

Pursuant to authority of the Board of Directors of this Company and the consent, concurrence and approval of its stockholders owning more than two-thirds in amount of all its capital stock, a First Mortgage was executed under date of May 1, 1929, to the Central Union Trust Company of New York, Trustee (now Central Hanover Bank and Trust Company), upon all the property of the Company now owned or hereafter acquired (excepting land grant lands) to secure

bonds to be issued thereunder from time to time to be known as Chicago, Saint Paul, Minneapolis and Omaha Railway Company First Mortgage — % Gold Bonds, to be dated, to become payable at such time, to bear such rate of interest as the Board of Directors may determine at the time of issue; and to be limited so that the amount thereof at any one time outstanding, together with all outstanding prior debt of the Company, after deducting therefrom the amount of all bonds reserved under the provisions of said indenture to retire prior debt at or before maturity, shall never exceed three times the par value of the then outstanding capital stock of the Company or of a successor corporation, for the purpose of exchanging, redeeming, purchasing, retiring, refunding, or paying, before, at, or after maturity, the existing bonded indebtedness of the Company and to pay for the construction, completion or acquisition by the Company of any line or lines of railway and for additions, betterments and rolling stock.

To provide funds for the redemption of \$45,186,000. of Funded Debt of the Company maturing in 1930, the Chicago and North Western Railway Company will make advances as the bonds become due and this Company will issue its First Mortgage Bonds for like amount and deposit same with the Chicago and North Western Railway Company as security for such advances.

Capital Stock

There has been no change since the close of the preceding year in the Capital Stock and Scrip of the Company.

The Company's authorized Capital Stock is Fifty Million Dollars (\$50,000,000), of which the following has been issued to December 31, 1929.

OUTSTANDING:		
Common Stock and Scrip.....	\$18,559,086.69	
Preferred Stock and Scrip.....	11,259,859.09	
		\$29,818,945.78
OWNED BY THE COMPANY:		
Common Stock and Scrip.....	\$ 2,844,206.64	
Preferred Stock and Scrip.....	1,386,974.20	
		4,231,180.84

Total Capital Stock and Scrip, December 31, 1929.. \$34,050,126.62

Appended hereto may be found Statements and Accounts relating to the business of the Company for the year, and the condition of its affairs on December 31, 1929.

The Board desires to express its appreciation to the officers and employees of the Company for their loyal and efficient service during the year.

By order of the Board of Directors.

FRED W. SARGENT,
President.

St. Paul, Minnesota, April 1, 1930.

Comparative General Balance Sheet (1,676.71 Miles)

December 31, 1928	ASSETS	December 31, 1929	December 31, 1928	LIABILITIES	December 31, 1929
	INVESTMENTS			CAPITAL STOCK	
\$ 92,187,112.77	Investment in Road and Equipment....	\$ 92,943,003.87	\$ 29,818,945.78	Held by Public.....	\$ 29,818,945.78
	Improvements on Leased Railway Property	30,660.85	4,231,180.84	Held in Treasury	4,231,180.84
94,645.01	Miscellaneous Physical Property.....	249,240.93			
399,244.48	Investment in Affiliated Companies.....	593,089.53	\$ 34,050,126.62	Total Capital Stock.....	\$ 34,050,126.62
14,632.28	Other Investments	15,152.44			
\$ 93,095,634.54	Total Investments	\$ 93,831,147.62	\$ 48,663,600.00	LONG TERM DEBT	
	CURRENT ASSETS		634.09	Funded Debt Held by the Public.....	\$ 48,806,800.00
\$ 751,404.14	Cash	\$ 876,930.70	\$ 48,664,234.09	Scrip Owned by the Company.....	634.09
36,317.33	Traffic and Car Service Balances Receivable	44,118.85		Total Long Term Debt.....	\$ 48,807,434.09
490,955.58	Net Balance Receivable from Agents and Conductors	463,557.61			
590,004.68	Miscellaneous Accounts Receivable.....	512,364.96	\$ 913,960.25	CURRENT LIABILITIES	
2,618,691.45	Material and Supplies.....	2,056,463.55	4,376,274.81	Traffic and Car Service Balances Payable \$	865,278.24
\$ 4,487,373.18	Total Current Assets.....	\$ 3,953,435.67	120,843.89	Audited Accounts and Wages Payable...	3,919,404.87
	UNADJUSTED DEBITS		49,656.00	Miscellaneous Accounts Payable.....	135,732.94
\$ 30,720.45	Discount on Funded Debt.....	\$ 17,935.89	8,072.50	Interest Matured Unpaid.....	41,841.00
2,844,206.64	Common Stock and Scrip, C. St. P. M. & O. Ry. Co., Held in Treasury.....	2,844,206.64	459,325.25	Dividends Matured Unpaid.....	8,072.50
1,386,974.20	Preferred Stock and Scrip, C. St. P. M. & O. Ry. Co., Held in Treasury.....	1,386,974.20	500.00	Unmatured Interest Accrued.....	457,712.83
634.09	Consolidated Mortgage Bond Scrip Due from Central Union Trust Company...	634.09		Funded Debt Matured Unpaid.....	500.00
410,508.38	Other Unadjusted Debits.....	437,464.25	\$ 5,928,632.70	Total Current Liabilities.....	\$ 5,428,542.38
\$ 4,673,043.76	Total Unadjusted Debits.....	\$ 4,687,215.07			
				UNADJUSTED CREDITS	
\$102,256,051.48	Total Assets	\$102,471,798.36	\$ 379,830.33	Tax Liability	\$ 373,608.67
			63,759.20	Premium on Funded Debt.....	28,467.50
			7,314,729.78	Accrued Depreciation—Equipment.....	7,711,168.96
			244,605.37	Other Unadjusted Credits.....	544,661.96
			\$ 8,002,924.68	Total Unadjusted Credits.....	\$ 8,657,907.09
				CORPORATE SURPLUS	
			\$ 1,190,371.77	Additions to Property Through Surplus..	\$ 1,194,242.99
			4,419,761.62	Profit and Loss.....	4,333,545.19
			\$ 5,610,133.39	Total Corporate Surplus.....	\$ 5,527,788.18
			\$102,256,051.48	Total Liabilities	\$102,471,798.36

[ADVERTISEMENT]

Union Pacific Railroad Company—Thirty-Third Annual Report—Year Ended December 31, 1929

NEW YORK, N. Y., April 10, 1930.

TO THE STOCKHOLDERS OF UNION PACIFIC RAILROAD COMPANY:

The Board of Directors submits the following report of the operations and affairs of the Union Pacific Railroad Company for the calendar year ended December 31, 1929, including the Oregon Short Line Railroad Company, whose entire capital stock is owned by the Union Pacific Railroad Company, the Oregon-Washington Railroad & Navigation Company, whose entire capital stock (except fifteen qualifying shares held by Directors) is owned by the Oregon Short Line Railroad Company, and the Los Angeles & Salt Lake Railroad Company,

whose entire capital stock is owned, one half each, by the Union Pacific Railroad Company and the Oregon Short Line Railroad Company. For convenience, the four companies are designated by the term "UNION PACIFIC SYSTEM."

Income

The operated mileage at close of year and income for the calendar year 1929, compared with 1928, after excluding all offsetting accounts between the Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon-Washington Railroad & Navigation Co., and Los Angeles & Salt Lake Railroad Co., were as follows:

	Calendar Year 1929.	Calendar Year 1928.	INCREASE.	DECREASE.
Operated Mileage at Close of Year				
Miles of road	9,878.21	9,857.53	20.68	
Miles of additional main track	1,554.67	1,547.16	7.51	
Miles of yard tracks and sidings	4,054.78	3,919.82	134.96	
Total Mileage Operated	15,487.66	15,324.51	163.15	
Transportation Operations				
Operating revenues	\$217,356,592.76	\$215,169,245.62	\$2,187,347.14	
Operating expenses	147,026,561.37	146,256,488.06	770,073.31	
Revenues over expenses	\$70,330,031.39	\$68,912,757.56	\$1,417,273.83	
Taxes	17,089,568.34	15,978,221.79	1,111,346.55	
Uncollectible railway revenues	13,952.59	9,647.37	4,305.22	
Railway Operating Income	\$53,226,510.46	\$52,924,888.40	\$301,622.06	
Rents from use of joint tracks, yards, and terminal facilities	1,452,821.57	1,064,656.17	388,165.40	
	\$54,679,332.03	\$53,989,544.57	\$689,787.46	
Hire of equipment—debit balance	\$6,974,463.90	\$7,965,912.58		\$991,448.68
Rents for use of joint tracks, yards, and terminal facilities	2,379,299.67	2,204,636.96	\$174,662.71	
	\$9,353,763.57	\$10,170,549.54		\$816,785.97
Net Income from Transportation Operations	\$45,325,568.46	\$43,818,995.03	\$1,506,573.43	
Income from Investments and Sources other than Transportation Operations				
Dividends on stocks owned	\$11,597,524.46	\$11,369,984.81	\$227,539.65	
Interest on bonds, notes, and equipment trust certificates owned	6,496,949.38	6,430,397.51	66,551.87	
Interest on loans and open accounts—balance	2,471,725.15	1,483,134.28	988,590.87	
Rents from lease of road	120,704.09	127,164.17		\$6,460.08
Miscellaneous rents	625,011.07	612,123.23	12,887.84	
Miscellaneous income	286,558.61	321,754.13		35,195.52
Total	\$21,598,472.76	\$20,346,558.13	\$1,251,914.63	
Total Income	\$66,924,041.22	\$64,165,553.16	\$2,758,488.06	
Fixed and Other Charges				
Interest on funded debt	\$17,035,128.53	\$17,573,934.29		\$538,805.76
Miscellaneous rents	25,298.42	35,387.97		10,089.55
Miscellaneous charges	607,571.42	449,358.76	\$158,212.66	
Total	\$17,667,998.37	\$18,058,681.02		\$390,682.65
Net Income from All Sources	\$49,256,042.85	\$46,106,872.14	\$3,149,170.71	
DISPOSITION OF NET INCOME				
Dividends on Stock of Union Pacific Railroad Co.:				
Preferred stock:				
2 per cent paid April 1, 1929	\$1,990,862.00			
2 per cent paid October 1, 1929	1,990,862.00	\$3,981,724.00	\$3,981,724.00	
Common stock:				
2½ per cent paid April 1, 1929	\$5,557,290.00			
2½ per cent paid July 1, 1929	5,557,290.00			
2½ per cent paid October 1, 1929	5,557,290.00			
2½ per cent payable January 2, 1930	5,557,290.00	22,229,160.00	22,229,160.00	
Total Dividends	\$26,210,884.00	\$26,210,884.00		
Sinking Fund Requirements	10,000.00		\$10,000.00	
Total Appropriations of Net Income	\$26,220,884.00	\$26,210,884.00	\$10,000.00	
Surplus, Transferred to Profit and Loss	\$23,035,158.85	\$19,895,988.14	\$3,139,170.71	

Operating Results for Year 1929 Compared with Year 1928

	Calendar Year 1929.	Calendar Year 1928.	INCREASE.	DECREASE.	PER CENT.
Average miles of road operated	9,869.40	9,813.48	55.92		.6
OPERATING REVENUES.					
1. Freight revenue	\$171,745,751.07	\$169,568,273.35	\$2,177,477.72		1.3
2. Passenger revenue	26,323,718.00	26,886,972.96		\$563,254.96	2.1
3. Mail revenue	5,232,626.30	4,680,872.46	551,753.84		11.8
4. Express revenue	4,464,243.37	4,347,280.52	116,962.85		2.7
5. Other passenger-train revenue	3,874,020.32	3,877,439.45		3,419.13	.1
6. Other train revenue	101,721.96	74,667.03	27,054.93		36.2
7. Switching revenue	1,306,024.48	1,302,709.49	3,314.99		.3
8. Water line revenue	72,390.43	80,459.55		8,069.12	10.0
9. Other revenue	4,236,096.83	4,350,570.81		114,473.98	2.6
10. Total operating revenues	\$217,356,592.76	\$215,169,245.62	\$2,187,347.14		1.0
OPERATING EXPENSES.					
11. Maintenance of way and structures	\$28,246,099.61	\$28,243,556.89	\$2,452.72		—
12. Maintenance of equipment	38,283,100.50	39,054,207.81		\$771,107.31	2.0

[ADVERTISEMENT]

	Calendar Year 1927.	Calendar Year 1928.	INCREASE.	DECREASE.	PER CENT.
13. Total maintenance expenses	\$66,529,110.11	\$67,297,764.70		\$768,654.59	1.1
14. Traffic expenses	4,909,341.10	4,638,306.39	\$271,034.71		5.8
15. Transportation expenses—rail line	62,638,350.86	61,713,749.85	924,601.01		1.5
16. Transportation expenses—water line	56,453.22	61,979.82		5,526.60	8.9
17. Miscellaneous operations expenses	4,531,661.95	4,679,814.51		148,152.56	3.2
18. General expenses	8,362,828.93	7,920,081.94	442,746.99		5.6
19. Transportation for investment— <i>Credit</i>	1,184.80	55,209.15		54,024.35	97.9
20. Total operating expenses	\$147,026,561.37	\$146,256,488.06	\$770,073.31		.5
21. Revenues over expenses	\$70,330,031.39	\$68,912,757.56	\$1,417,273.83		2.1
TAXES.					
22. State and county	\$11,988,300.23	\$11,433,374.14	\$554,926.09		4.9
23. Federal income and other federal	5,101,268.11	4,544,847.65	556,420.46		12.2
24. Total taxes	\$17,089,568.34	\$15,978,221.79	\$1,111,346.55		7.0
25. Uncollectible railway revenues	\$13,952.59	\$9,647.37	\$4,305.22		44.6
26. Railway operating income	\$53,226,510.46	\$52,924,888.40	\$301,622.06		.6
27. Equipment rents (debit)	6,974,463.90	7,965,912.58		\$991,448.68	12.4
28. Joint facility rents (debit)	926,478.10	1,139,980.79		213,502.69	18.7
29. Net railway operating income	\$45,325,568.46	\$43,818,995.03	\$1,506,573.43		3.4
Per cent—Operating expenses of operating revenues	67.64	67.97		.33	.5
FREIGHT TRAFFIC. (Commercial Freight Only)					
Tons of revenue freight carried	36,250,018	35,717,820	532,198		1.5
Ton-miles, revenue freight	14,430,923,565	14,301,827,671	129,095,894		.9
Average distance hauled per ton (miles)	398.09	400.41		2.32	.6
Average revenue per ton-mile (cents)	1.172	1.168	.004		.3
Average revenue per freight-train mile	\$7.47	\$7.46	\$.01		.1
PASSENGER TRAFFIC. (Excluding Motor Car)					
Revenue passengers carried	3,021,329	3,091,964		70,635	2.3
Revenue passengers carried one mile	894,452,892	889,651,207	4,801,685		.5
Average distance hauled per passenger (miles)	296.05	287.73	8.32		2.9
Average passengers per passenger-train mile	47.76	47.23	.53		1.1
Average revenue per passenger-mile (cents)	2.895	2.942		.047	1.6
Average revenue per passenger-train mile, passengers only	\$1.38	\$1.39		\$.01	.7
Average total revenue per passenger-train mile	\$2.09	\$2.06	\$.03		1.5

The increase of \$2,177,477.72 or 1.3% in "Freight Revenue" was due to an increase of .9 per cent in net ton-miles of revenue freight carried, and to an increase of .3 per cent in average revenue per ton-mile occasioned by fluctuations in the kinds of commodities hauled. Due chiefly to large crops of oranges in Southern California and of vegetables in Idaho and California, there were substantial increases in the movement of these commodities, except potatoes, the movement of which decreased because of a small hold-over from the 1928 crop in Idaho, which was less than the 1927 crop. The transportation of petroleum oils also increased, principally because of a greater demand for gasoline for automobiles, and for fuel oil by industries. Improved conditions in the mining industry resulted in a heavier movement of lead, zinc and copper from smelters in Utah, Idaho and Montana; and the movement of gravel, sand and stone increased chiefly because of more highway improvements and the construction of a pleasure pier at Long Beach, California. Coal moved in greater volume due to colder weather during the winter months. Shipments of manufactures and miscellaneous commodities increased substantially, particularly (1) iron and steel pipe, because of more construction of natural gas pipe lines in System territory, (2) machinery and boilers, due to general increase in industrial activities, and (3) automobiles, tractors, and parts, early in the year, because of heavy demand and large production, partially offset by a decrease in the latter part of the year when demand lessened and production was curtailed. The movement of deciduous fruits and grain decreased substantially, due chiefly to smaller crops, of deciduous fruits in California and the Northwest States, of wheat in Kansas; and to a small hold-over from the 1928 corn crop in Nebraska. There were decreases also in the transportation of livestock and forest products, attributable respectively to a smaller supply of marketable cattle and sheep because of poor condition of the ranges and to general depression in the lumber industry.

The decrease of \$563,254.96 or 2.1% in "Passenger Revenue" was due principally to continued diversion of business to motor vehicles.

The increase of \$551,753.84 or 11.8% in "Mail Revenue" was due to an increase of approximately 15 per cent in mail pay rates effective August 1, 1928. The increase in rates was retroactive to May 9, 1925, but the additional amount for the period May 9, 1925, to July 31, 1928, \$2,096,735.52, collected in 1929, was credited to Profit and Loss instead of to the current year's income.

The increase of \$116,962.85 or 2.7% in "Express Revenue" was due principally to an increase in movement of less than carload express traffic.

The decrease of \$114,473.98 or 2.6% in "Other Revenue" was due principally to the results of operations in Southern Utah

Parks being included in the operating accounts of the Railroad Companies in prior years, while the net results of operations are now included as Miscellaneous Income or Miscellaneous Charges.

The increase of \$2,452.72 in "Maintenance of Way and Structures Expenses" was due to ordinary fluctuations in repairs and renewals.

The principal track materials used during the year in making renewals were as follows:

New steel rails	246.55 track miles
Second-hand steel rails	54.72 " "

Total 301.27 track miles
excluding yard tracks and sidings, equivalent to 2.9 per cent of the track miles in main track at the beginning of the year. Ties 2,404,096 (98.2 per cent treated), equivalent to 6.2 per cent of all ties in track at the beginning of the year. Tie plates 1,295,355 and continuous rail joints 95,671.

The decrease of \$771,107.31 or 2% in "Maintenance of Equipment Expenses" was due principally to reduction of \$490,000 in charges for the retirement of obsolete and worn-out equipment, all necessary retirements however having been made. Equipment in service was fully maintained, maintenance work having been only slightly different from last year, but due to greater effectiveness resulting from the continued application of new appliances to equipment, the installation of improved machinery and other facilities, and improved methods, the work cost less even though there was an increase of approximately \$638,000 in wage schedules.

The increase of \$271,034.71 or 5.8% in "Traffic Expenses" was due chiefly to increase in expenditures for advertising.

The increase of \$924,601.01 or 1.5% in "Transportation Expenses—Rail Line" was due principally to increase of 1.5 per cent in freight-locomotive miles and 1 per cent in freight-train miles because of improved competitive train schedules, resulting in increases in quantities of fuel consumed, in yard forces and in train and engine supplies and expenses, and to increases in wage schedules, chiefly of trainmen, and payments for loss, damage and casualties; partially offset by decrease in price of fuel.

The decrease of \$148,152.56 or 3.2% in "Miscellaneous Operations Expenses" was due principally to the results of operations in Southern Utah Parks being included in the operating accounts of the Railroad Companies in prior years, while the net results of operations are now included as Miscellaneous Income or Miscellaneous Charges.

The increase of \$442,746.99 or 5.6% in "General Expenses" was due principally to increases in pension payments and valuation expenses.

An analysis by classes of the increase of \$1,111,346.55 or 7% in "Taxes" is shown in the table. The increase in State and county taxes resulted from increases in several States in both

General Balance Sheet—Assets

(Excluding all offsetting securities and accounts between the Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon-Washington Railroad & Navigation Co., and Los Angeles & Salt Lake Railroad Co.)

Investments:	December 31, 1929.	December 31, 1928.	INCREASE.	DECREASE.
ROAD AND EQUIPMENT				
Less:	\$909,873,259.09	\$898,463,640.88	\$11,409,618.21	
Receipts from improvement and equipment fund				
Appropriations from income and surplus prior to July 1, 1907, credited to this account	\$23,823,091.13 13,310,236.52	\$23,823,091.13 13,310,236.52		
Total	\$37,133,327.65	\$37,133,327.65		
701. Investment in road and equipment	\$872,739,931.44	\$861,330,313.23	\$11,409,618.21	
704. DEPOSITS IN LIEU OF MORTGAGED PROPERTY SOLD	\$255,634.49	\$254,239.88	\$1,394.61	
705. MISCELLANEOUS PHYSICAL PROPERTY	2,376,800.13	2,104,473.34	272,326.79	
Total	\$2,632,434.62	\$2,358,713.22	\$273,721.40	
706. Investments in affiliated companies:				
Stocks	\$21,853,592.46	\$20,596,514.46	\$1,257,078.00	
Bonds, notes, and equipment trust certificates	24,535,064.50	26,549,446.13		\$2,014,381.63
Advances	20,194,845.61	12,148,264.88	8,046,580.73	
Total	\$66,583,502.57	\$59,294,225.47	\$7,289,277.10	
707. Investments in other companies:				
Stocks	\$93,932,217.27	\$96,473,909.93		\$2,541,692.66
Bonds, notes, and equipment trust certificates	76,213,897.06	75,891,234.76	\$322,662.30	
Total	\$170,146,114.33	\$172,365,144.69		\$2,219,030.36
UNITED STATES GOVERNMENT BONDS AND NOTES	\$32,013,361.56	\$32,013,361.56		
703. SINKING FUNDS	\$156,797.93	\$149,316.72	\$7,481.21	
Total Investments	\$1,144,272,142.45	\$1,127,511,074.89	\$16,761,067.56	
Current Assets:				
708. CASH	\$9,313,776.85	\$7,229,822.31	\$2,083,954.54	
709. DEMAND LOANS AND DEPOSITS	6,500,000.00	27,000,000.00		\$20,500,000.00
710. TIME DRAFTS AND DEPOSITS	50,000.00	150,000.00		100,000.00
711. SPECIAL DEPOSITS	81,678.41	185,316.60		103,638.19
712. LOANS AND BILLS RECEIVABLE	9,285.92	6,102,131.44		6,092,845.52
713. TRAFFIC AND CAR SERVICE BALANCES RECEIVABLE	4,120,597.18	5,122,044.43		1,001,447.25
714. NET BALANCE RECEIVABLE FROM AGENTS AND CONDUCTORS	1,125,724.24	1,309,889.34		184,165.10
715. MISCELLANEOUS ACCOUNTS RECEIVABLE	4,637,685.18	4,456,631.99	181,053.19	
716. MATERIAL AND SUPPLIES	17,963,837.11	15,996,104.08	1,967,733.03	
717. INTEREST AND DIVIDENDS RECEIVABLE	1,752,392.62	1,916,294.24		163,901.62
718. RENTS RECEIVABLE	178,758.63	173,793.36	4,965.27	
719. OTHER CURRENT ASSETS:				
Baltimore and Ohio Railroad Co. capital stock applicable to pay- ment of extra dividend of 1914	125,058.20	129,338.20		4,280.00
Miscellaneous items	99,233.29	131,950.87		32,717.58
Total Current Assets	\$45,958,027.63	\$69,903,316.86		\$23,945,289.23
Deferred Assets:				
720. WORKING FUND ADVANCES	\$101,836.70	\$76,076.13	\$25,760.57	
722. OTHER DEFERRED ASSETS:				
Land contracts, as per contra	14,257.93	48,414.39		\$34,156.46
Miscellaneous items	2,978,317.57	3,619,868.86		641,551.29
Total Deferred Assets	\$3,094,412.20	\$3,744,359.38		\$649,947.18
Unadjusted Debits:				
723. RENTS AND INSURANCE PREMIUMS PAID IN ADVANCE	\$4,742.92	\$7,253.01		\$2,510.09
725. DISCOUNT ON FUNDED DEBT	985,156.88	1,016,850.92		31,694.04
727. OTHER UNADJUSTED DEBITS	1,373,431.71	1,532,008.94		158,577.23
Total Unadjusted Debits	\$2,363,331.51	\$2,556,112.87		\$192,781.36
Grand Total	\$1,195,687,913.79	\$1,203,714,864.00		\$8,026,950.21

assessments and tax levies. The increase in Federal income and other Federal taxes was due to increase in taxable income and profits, partially offset by a decrease in the income tax rate from 12 to 11 per cent.

The decrease of \$991,448.68 or 12.4% in "Equipment Rents (Debit)" was due chiefly to decrease in mileage payments on refrigerator cars, there having been a substantial decrease in number of carloads of perishable commodities handled.

The decrease of \$213,502.69 or 18.7% in "Joint Facility Rents (Debit)" was due chiefly to an accounting adjustment.

The increase in "Investment in Road and Equipment" is made up as follows:

Extensions and Branches	\$98,818.02
Additions and Betterments, excluding Equipment	8,087,598.35
Equipment	7,673,796.51

Total Increase

From which there was deducted:

Cost of property retired from service and not to be replaced:	\$184,795.18
Cost of real estate retired	41,818.65
Cost of equipment retired from service:	1,554,489.08
Cost of property and equipment transferred to Utah Parks Company and Union Pacific Stages,	

Incorporated

Total Deductions

Net increase in "Investment in Road and Equipment"

In September 1929 construction was authorized of a branch line, to extend 22.71 miles in a general easterly direction from a connection with the present main line at a point about 7.17 miles south of Las Vegas, Nevada, to provide for the transportation of men and materials necessary for the construction by the United States Government of the Boulder Dam at Black Canyon on the Colorado River. It is estimated that construction of the dam will take about seven years and that approximately 8,000,000 tons of materials and supplies will be required, including 6,000,000 tons of sand and rock.

During the year the Oregon-Washington Railroad & Navigation Company and Northern Pacific Railway Company arranged for the construction of a line, to be jointly owned and operated, to extend approximately 67 miles northerly from a point near Moclips, Washington, on a branch of the Northern Pacific, into the Olympic Peninsula to a point on the north bank of the Hoh River, near Spruce, Washington, to serve an undeveloped territory of about 1,468 square miles, containing standing timber consisting of approximately 30,000,000,000 feet of

General Balance Sheet—Liabilities

(Excluding all offsetting securities and accounts between the Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon-Washington Railroad & Navigation Co., and Los Angeles & Salt Lake Railroad Co.)

	December 31, 1929.	December 31, 1928.	INCREASE.	DECREASE.
751. Capital Stock:				
Common stock	\$222,293,100.00	\$222,293,100.00		
Preferred stock	99,543,100.00	99,543,100.00		
Total Capital Stock	\$321,836,200.00	\$321,836,200.00		
755. Funded Debt	362,116,420.00	409,356,215.00		\$47,239,795.00
Total	\$683,952,620.00	\$731,192,415.00		\$47,239,795.00
754. Grants in Aid of Construction	\$831,067.98	\$756,688.08	† \$74,379.90	
Current Liabilities:				
759. TRAFFIC AND CAR SERVICE BALANCES PAYABLE	\$1,600,025.53	\$1,805,897.68		\$205,872.15
760. AUDITED ACCOUNTS AND WAGES PAYABLE	10,548,468.97	11,025,835.40		477,366.43
761. MISCELLANEOUS ACCOUNTS PAYABLE:				
Due to affiliated companies	20,534,409.14	16,938,938.09	\$3,595,471.05	
Other accounts payable	206,916.90	238,015.58		31,098.68
762. INTEREST MATURED UNPAID:				
Coupons matured, but not presented	118,070.24	158,852.29		40,782.05
Coupons and interest on registered bonds, due first proximo	4,516,523.10	4,516,507.40	15.70	
763. DIVIDENDS MATURED UNPAID:				
Dividends due but uncalled for	127,716.50	123,881.50	3,835.00	
Extra dividend on common stock declared January 8, 1914, payable to stockholders of record March 2, 1914, unpaid	134,902.30	139,424.24		4,521.94
Dividend on common stock payable second proximo	5,557,290.00	5,557,290.00		
764. FUNDED DEBT MATURED UNPAID	580,325.00	133,900.00	446,425.00	
766. UNMATURED INTEREST ACCRUED	1,552,020.44	1,715,793.77		163,773.33
767. UNMATURED RENTS ACCRUED	635,403.56	550,318.95	85,084.61	
768. OTHER CURRENT LIABILITIES	148,641.23	174,368.09		25,726.86
Total Current Liabilities	\$46,260,712.91	\$43,079,022.99	\$3,181,689.92	
Deferred Liabilities:				
770. OTHER DEFERRED LIABILITIES:				
Principal of deferred payments on land contracts, as per contra	\$14,257.93	\$48,414.39		\$34,156.46
Contracts for purchase of real estate	1,660,000.00	1,660,000.00		
Miscellaneous items	8,191,886.58	7,932,045.80	\$259,840.78	
771. TAX LIABILITY	11,075,936.52	10,216,998.90	858,937.62	
Total Deferred Liabilities	\$20,942,081.03	\$19,857,459.09	\$1,084,621.94	
Unadjusted Credits:				
773. INSURANCE RESERVE:				
Reserve for fire insurance	\$3,679,494.92	\$3,303,755.81	\$375,739.11	
776. RESERVE FOR DEPRECIATION	74,524,804.59	69,313,093.01	5,211,711.58	
778. OTHER UNADJUSTED CREDITS:				
Contingent interest	678,369.09	678,366.09	3.00	
Miscellaneous items	2,555,822.95	2,903,226.05		\$347,403.10
Total Unadjusted Credits	\$81,438,491.55	\$76,198,440.96	\$5,240,050.59	
Total Liabilities	\$833,424,973.47	\$871,084,026.12		\$37,659,052.65
Surplus:				
APPROPRIATED FOR ADDITIONS AND BETTERMENTS	\$30,425,460.90	\$30,373,965.02	† \$51,495.88	
RESERVED FOR DEPRECIATION OF SECURITIES	34,972,570.88	34,972,570.88		
FUNDED DEBT RETIRED THROUGH INCOME AND SURPLUS	536,828.66	536,828.66		
SINKING FUND RESERVES	170,126.22	152,221.43	17,904.79	
Total Appropriated Surplus	\$66,104,986.66	\$66,035,585.99	\$69,400.67	
784. Profit and Loss—Credit Balance	264,485,059.44	234,222,375.67	29,562,683.77	
Total Surplus	\$330,590,046.10	\$300,957,961.66	\$29,632,084.44	
As this consolidated balance sheet excludes all intercompany items, securities of the Los Angeles & Salt Lake Railroad Company owned by other System companies are not included. The difference between the par and face value of such securities as carried on the books of the Los Angeles & Salt Lake (less unextinguished discount on the bonds and discount charged to Profit and Loss but added back in consolidating the accounts) and the amounts at which the securities are carried on the books of the owning System companies is set up here to balance	\$31,672,894.22	\$31,672,876.22	\$18.00	
Grand Total	\$1,195,687,913.79	\$1,203,714,864.00		\$8,026,950.21

† These amounts respectively represent donations made during the year by Federal Government, States, counties and municipalities and by individuals and companies in part payment for improvements, such as road crossings, drainage projects, and industry spur tracks, the cost of which was charged to "Investment in Road and Equipment." These amounts are so accounted for to conform with regulations of the Interstate Commerce Commission.

softwood, principally hemlock, spruce, fir and cedar, and of about 1,000,000,000 feet of hardwood; approximately 7,000,000,000 feet of reclaimable fallen timber blown down in 1921; and about 140,000 acres of land suitable for agricultural development, especially dairy farming and the raising of lettuce and berries. While the mineral resources of the territory have not been fully explored, it is believed that considerable deposits of manganese ore and other minerals with commercial possibilities are present. Construction will be commenced early in 1930 and, it is estimated, completed in 1932. The Northern Pacific has agreed, effective with commencement of operation of the proposed line, to grant joint and equal use of its branch line between Hoquiam and Moclips, Washington, a distance of 26.5 miles, to the Oregon-Washington Railroad & Navigation Company, to enable it to reach the proposed line.

With the continued development of improved highways in System territory, the demand of the public for highway motor coach service has steadily grown and, as a consequence, the passenger traffic on railroad trains has continuously decreased.

To meet this situation and maintain the position of the System in the transportation business in its territory, it was decided to provide highway motor coach service, discontinuing local passenger train service wherever practicable. In 1925 highway motor coach service was inaugurated for a short distance in Oregon and Washington and the operation of a local passenger train discontinued, and in 1927 this service was extended in those States and additional local passenger train service discontinued. During the year 1929 the service was gradually extended and at the end of the year our subsidiary motor coach companies were operating from Chicago and St. Louis to Los Angeles and Portland, with a number of local feeder routes, over 7,000 miles of highway. The investment as of December 31, 1929, in properties devoted to this service was approximately \$3,000,000. Some of the operations, for instance between Chicago and Omaha, are along the lines of the Chicago & North Western Railway Company, which owns a proportionate part of the stock of the motor coach company conducting these operations.

[ADVERTISEMENT]

Atchison, Topeka & Santa Fe Railway System

Office of The Atchison, Topeka and Santa Fe Railway System,
No. 5 Nassau Street, New York City.

March 21, 1930.

To the Stockholders:

Your Directors submit the following report for the fiscal year January 1, 1929, to December 31, 1929, inclusive.

Income and Profit and Loss Statement

The following is a summary of the transactions of the System for the years ending December 31, 1928 and 1929:

	1928.	1929.
Operating Revenues.....	\$247,632,836.61	\$267,189,178.12*
Operating Expenses.....	171,992,255.08	175,243,236.62
Net Operating Revenues.....	\$75,640,581.53	\$91,945,941.50
Railway Tax Accruals.....	17,772,346.19	20,340,961.38
Uncollectible Railway Revenues.....	50,126.44	54,555.91
Equipment and Joint Facility Rents.....	2,485,582.92	2,898,093.50
Net Railway Operating Income.....	\$55,332,525.98	\$68,652,330.71
Other Income.....	6,224,256.62	5,827,913.81
Gross Income.....	\$61,556,782.60	\$74,480,244.52
Miscellaneous Tax Accruals.....	76,604.45	80,779.12
Rent for Leased Roads and Other Charges.....	455,628.30	595,783.80
Interest on Bonds, including accrued interest on Adjustment Bonds.....	\$61,024,549.85	\$73,803,681.60
Net Corporate Income (representing amount available for dividends and surplus).....	11,094,119.30	12,766,878.31
From the net corporate income for the year the following sums have been deducted:		
DIVIDENDS ON PREFERRED STOCK—		
No. 62 (2½%) paid.....		
Aug. 1, 1929.....	\$3,104,320.00	
No. 63 (2½%) paid.....		
Feb. 1, 1930.....	3,104,320.00	
		\$ 6,208,640.00
DIVIDENDS ON COMMON STOCK—		
No. 96 (2½%) paid.....		
June 1, 1929.....	\$6,040,732.50	
No. 97 (2½%) paid.....		
Sept. 3, 1929.....	6,040,732.50	
No. 98 (2½%) paid.....		
Dec. 2, 1929.....	6,040,732.50	
No. 99 (2½%) paid.....		
Mar. 1, 1930.....	6,040,732.50	
		24,162,930.00
California-Arizona Lines Bonds Sinking Fund.....	21,397.03	
S. F. & S. J. V. Ry. Co. Bonds Sinking Fund.....	54,277.80	
		30,447,244.83
Surplus carried to Profit and Loss.....		\$30,589,558.46
Surplus to credit of Profit and Loss, December 31, 1928.....	\$283,366,273.01	
Surplus appropriated for investment in physical property:		
Appropriated 1929—debit.....	\$229,842.87	
Adjustment prior years' appropriations—credit.....	818,568.83	
Sundry adjustments—debit.....	84,199.58	
		504,526.38
		283,870,799.39
Surplus to credit of Profit and Loss December 31, 1929..		\$314,460,357.85

* Includes \$2,493,193.36 back mail pay.

"Other Income" consists of interest accrued and dividends received on securities owned, including United States Government securities, interest on bank balances, rents from lease of road and other property, and other miscellaneous receipts.

Comparison of Operating Results

The following is a statement of revenues and expenses of the System for the year ending December 31, 1929, in comparison with the previous year:

	Year ending Dec. 31, 1929.	Year ending Dec. 31, 1928.	Increase or Decrease.
OPERATING REVENUES:			
Freight.....	\$204,551,491.70	\$189,003,111.71	\$15,548,379.99
Passenger.....	37,926,205.06	38,371,577.24	445,372.18
Mail, Express, and Miscellaneous.....	*24,711,481.36	20,258,147.66	4,453,333.70
Total Operating Revenues.....	\$267,189,178.12	\$247,632,836.61	\$19,556,341.51
OPERATING EXPENSES:			
Maintenance of Way and Structures.....	\$42,175,626.91	\$41,786,098.15	\$389,528.76

	Year ending Dec. 31, 1929.	Year ending Dec. 31, 1928.	Increase or Decrease.
Maintenance of Equipment.....	48,439,076.66	47,915,568.45	523,508.21
Traffic.....	5,840,227.06	5,640,588.65	199,638.41
Transportation—Rail Line.....	73,011,041.33	71,674,693.93	1,336,347.40
Miscellaneous Operations.....	252,570.42	175,624.67	76,945.75
General.....	6,694,388.76	6,279,349.30	415,039.46
Transportation for Investment—Cr.	1,169,694.52	1,479,668.07	309,973.55
Total Operating Expenses.....	\$175,243,236.62	\$171,992,255.08	\$3,250,981.54
Net Operating Revenue.....	\$91,945,941.50	\$75,640,581.53	\$16,305,359.97
Railway Tax Accruals.....	20,340,961.38	17,772,346.19	2,568,615.19
Uncollectible Railway Revenues.....	54,555.91	50,126.44	4,429.47
Railway Operating Income.....	\$71,550,424.21	\$57,818,108.90	\$13,732,315.31
Equipment Rents—Net—Dr.	2,311,607.65	1,720,879.91	590,727.74
Joint Facility Rents—Net—Dr.	586,485.85	764,703.01	178,217.16
Net Railway Operating Income.....	\$68,652,330.71	\$55,332,525.98	\$13,319,804.73

* Includes \$2,493,193.36 back mail pay.

The following are averages for 1929 compared with 1928: The average tons of freight (revenue and company) per loaded car mile increased from 22.19 to 22.62, or 1.94 per cent.

The average tons of freight (revenue and company) carried per freight-train mile (freight and mixed) decreased from 737.72 to 737.33, or .05 per cent.

The average freight revenue per freight-train mile decreased from \$8.14 to \$8.13, or .12 per cent.

The average passenger revenue per passenger-train mile decreased from \$1.58 to \$1.56, or 1.27 per cent.

The average passenger-train revenue per passenger-train mile increased from \$2.23 to \$2.26, or 1.35 per cent.

The tons of revenue and company freight carried one mile increased 1,404,176,066, or 8.19 per cent, the miles run by freight-train cars (loaded and empty) in freight and mixed trains increased 100,656,383, or 8.38 per cent, and the mileage of such trains increased 1,926,522, or 8.29 per cent.

The number of passengers carried one mile increased 10,057,349, or .82 per cent, the miles run by passenger-train cars (excluding work) in passenger and mixed trains increased 5,878,901, or 3.03 per cent, and the mileage of such trains increased 46,352, or .19 per cent.

Taxes

Federal, and State and Local tax accruals for the year 1929 aggregate \$20,340,961.38, an increase of \$2,568,615.19 compared with the year 1928. A comparison of these accruals for the two years is presented in the following table:

	1929.	1928.	Increase or Decrease.
FEDERAL TAXES:			
Income and War.....	\$6,651,650.56	\$4,432,563.27	\$2,219,087.29
Capital Stock.....		94,000.00	94,000.00
Stamp and License.....	39,510.76	11,910.17	27,600.59
Total.....	\$6,691,161.32	\$4,538,473.44	\$2,152,687.88
STATE AND LOCAL.....	13,649,800.06	13,233,872.75	415,927.31
Grand Total.....	\$20,340,961.38	\$17,772,346.19	\$2,568,615.19

General

Conditions during the year 1929 throughout the territory served by your lines were excellent and as a result gross earnings show an increase in each month over those of the corresponding month last year, excepting only December, and the total is the largest yet earned by your road. This increase was largely due to freight and to mail. Of the latter item \$2,493,193 represented payment by the Government of back mail pay for the period May, 1925, to August, 1928, following a decision of the Supreme Court sustaining the decision of the Interstate Commerce Commission. Passenger earnings show a small decrease and the number of passengers carried is again the smallest since 1920, being 4,253,695 as against 4,520,339 in 1928. Express earnings showed a slight increase. Net earnings also increased. Operating conditions have been normal throughout the year with one exception—a very severe flood in the Rio Grande Valley and its tributary the Rio Puerco. All traffic between Albuquerque and El Paso was suspended for eighteen days by the Rio Grande washouts, and our through line to the Pacific Coast was out of commission for four days due to the Rio Puerco.

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The physical plant of your Company has been well maintained. In connection with roadway maintenance 713 miles of old rail were replaced with new. Of the new rail 7 miles were 130-lb., 511 miles were 110-lb., and 195 miles were 90-lb. Since the adoption of 110-lb. rail as standard for our transcontinental main lines 2,631 miles of this weight have been laid. In connection with rolling stock, the long established policy of equipping locomotives and cars with modern economical improvements has been and will be continued. For illustration, locomotives have been and are being equipped with the latest devices to save fuel, reduce maintenance expense, and increase efficiency. Work of this character is practically completed. As to freight-train cars, steel ends, steel bound doors with bottom rollers, and steel drop bottom doors, are being installed where justified to replace similar parts of less durable material, and arch bar trucks are being removed pursuant to a recent rule of the American Railway Association requiring such removal by 1936.

Request has been made by President Hoover upon all lines of industry to cooperate in maintaining industrial and business activity and national prosperity. The program of capital expenditures by your Company for the current year will contribute substantially toward this end. It includes new equipment consisting of 5,854 freight cars, 49 passenger cars, 2 gas-electric cars, and 1 new type freight locomotive for trial purposes preparatory to equipping portions of the railroad with this improved power. In addition to completing 172 miles of new lines in Texas now under construction, request has been made upon the Interstate Commerce Commission for authority to build 380 miles additional to round out lines north from Amarillo, Texas, to Las Animas, Colorado, and from Felt,

Oklahoma, to Colmar, New Mexico. These proposed lines will open up territory now largely without railroad facilities, and thus serve as valuable feeders to existing lines; they will also offer new and shorter through routes both north and south and east and west for a substantial volume of traffic. About the usual program of additions and betterments will be carried out. The total program contemplates, roughly, \$85,000,000 of capital additions, on which approximately \$50,000,000 will be spent during this year. Attention might be called to the fact that in the regular course of maintenance and operation there will also be spent about \$100,000,000 for wages and \$70,000,000 for materials.

As this report goes to press, word has come of the death on March 6, 1930, at Kobe, Japan, of Dr. Arthur T. Hadley, one of your Directors. Dr. Hadley has served on the Board and as a member of the Executive Committee since April 6, 1920.

His splendid intellectual attainments, particularly in the field of political science, and his exhaustive study into the problems connected with the issuance of railroad securities, leading to his appointment in 1910 by President Taft as Chairman of the Committee to report to Congress on this subject, especially fitted him for his duties as a Director.

In addition to his wise and helpful counsel, his fine ideals and genial personality made any association with him a pleasure. His loss from the Board will be very deeply felt.

Your Directors take pleasure in expressing their appreciation of faithful and efficient service rendered by officers and employees.

W. B. STOREY,
President.

[ADVERTISEMENT]

Financial News

(Continued from page 993)

ment trust of 1929 certificates, subject to the approval of the Interstate Commerce Commission, at prices to yield from 4 to 5 per cent, depending upon the date of maturity, which varies from 1930 to 1944.

INTERMOUNTAIN.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line between Steirman and Centerville, Idaho, 13 miles.

LONG ISLAND.—Abandonment.—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a portion of its Whitestone branch extending from the west bank of the Flushing river to Whitestone Landing, in Queens county, New York, 4.1 miles, over the vigorous opposition of the Transit Commission of New York, the city of Long Island, the Association of Long Island Commuters, and others. The railroad is required, however, to provide an adequate motor coach and motor truck service for the territory where railroad operation is to be abandoned. Commissioner Aitchison wrote a dissenting opinion stating that "assuming our jurisdiction, our discretion should be exercised in the light of the whole circumstances, foremost of which is the fact that the connection with interstate commerce is tenuous and casual.....unless a substantial burden exists against interstate commerce which can be relieved in no other way, we should leave the applicant to respond to the laws of the state which chartered it and the municipality whose franchises it has accepted." This is a case, he added, "wherein on the present meager record our authority as a maximum should not be exercised

beyond the granting of permission to withdraw from interstate service."

LOUISIANA & ARKANSAS.—Abandonment.—The Louisiana Railway & Navigation Company has been authorized to abandon and the Louisiana & Arkansas to abandon operation of a portion of a branch line extending from a point two miles south of Winnfield, La., southward to Aloha, 25.4 miles.

MISSOURI-KANSAS-TEXAS.—New Directors.—J. B. Barnes, vice-president, assistant treasurer and assistant secretary of the Katy, and M. E. Singleton of St. Louis, Mo., president of the Utah-Idaho Central and a number of cotton oil companies in the Southwest, have been elected directors to succeed Howard Bayne and Richard H. Swartout.

NEW ORLEANS GREAT NORTHERN.—Annual Report.—The 1929 annual report of this road shows net deficit, after interest and other charges, of \$82,687, as compared with net income in 1928 of \$128,907. Selected items from the income statement follow:

	1929	1928	Increase or decrease
RAILWAY OPERATING REVENUES	3,262,756	3,231,189	+ 31,566
Maintenance of way	536,248	435,417	+ 100,830
Maintenance of Equipment	576,031	492,492	+ 83,539
Transportation	979,785	974,857	+ 4,927
TOTAL OPERATING EXPENSES	2,402,415	2,201,916	+ 200,500
NET REVENUE FROM OPERATIONS	860,340	1,029,274	—168,934
Railway tax accruals	201,431	228,010	— 26,579
Railway operating income	658,274	801,000	—142,727
Hire of equipment	223,480	176,629	+ 46,851
Joint Facility rents	79,082	54,913	+ 24,169

	1929	1928	Increase or decrease
Non-operating income	80,644	80,437	+ 207
GROSS INCOME	738,918	881,438	—142,519
Interest on funded debt	407,000	407,000
TOTAL DEDUCTIONS FROM GROSS INCOME	821,605	752,530	+ 69,075
NET INCOME	82,687	128,907	—211,595

* Deficit.

NEW YORK, CHICAGO & ST. LOUIS.—Bonds.—The Interstate Commerce Commission has authorized this company to issue \$12,000,000 of refunding mortgage 4½ per cent, series C bonds, to mature in 1978 and redeemable at 102. The issue is authorized for sale to the Guaranty Company and Lee, Higginson & Co. at 95, which will make the average annual cost to the railroad approximately 4.765 per cent.

NEW YORK, NEW HAVEN & HARTFORD.—Valuation.—This company has applied to the Interstate Commerce Commission for a rehearing in its valuation case, particularly as to the failure of the commission to include in the final value any amount for its rights to use the Grand Central Terminal property in New York.

NORFOLK SOUTHERN.—Annual Report.—This company's 1929 annual report shows net income after interest and other charges of \$346,890, as compared with net income of \$606,927 in 1928. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	931.59	931.52	+ .07
RAILWAY OPERATING REVENUES	8,108,288	9,122,317	—1,014,029

	1929	1928	Increase or decrease
Maintenance of way	1,141,489	1,207,794	— 66,305
Maintenance of Equipment ..	1,172,148	1,282,533	— 110,385
Transportation	3,041,707	3,393,154	— 351,447
TOTAL OPERATING EXPENSES	6,004,875	6,543,270	— 538,395
Operating ratio	74.06	71.73	+ 2.33
NET REVENUE FROM OPERATIONS	2,103,413	2,579,047	— 475,634
Railway tax accruals	614,052	725,072	— 111,020
Railway operating income	1,484,383	1,849,899	— 365,516
Hire of equipment—Net ..	173,426	283,081	— 109,655
Joint Facility rents	20,767	22,710	— 1,943
Non-operating income	92,667	104,744	— 12,077
GROSS INCOME	1,577,050	1,954,643	— 377,593
Rent for leased roads	167,102	167,102
Interest on funded debt ..	816,291	823,801	— 7,510
TOTAL DEDUCTIONS FROM GROSS INCOME ..	1,230,160	1,347,716	— 117,556
NET INCOME	346,890	606,927	— 260,037

OREGON ELECTRIC.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire the property of the Valley & Sil-etz, which has a line of 40.6 miles in Polk and Benton counties, Ore., and for authority to construct an extension of 2.25 miles connecting with it at Independence, Ore.

PENNSYLVANIA.—Annual Election.—At the annual election of the stockholders of this company, held on April 22 a resolution empowering directors to offer at par \$18,000,000 of stock for subscription by employees was approved as was another increasing by \$170,000,000 the authorized capital stock of the company. The company has no intention of issuing any of this stock at the present time. Two other resolutions approved leases to the Pennsylvania Railroad of two important subsidiaries, the West Jersey & Seashore and the Western New York & Pennsylvania. Both leases are for terms of 999 years, dating from July 1, 1930. The rental in the case of the West Jersey & Seashore Railroad, will be an annual sum equivalent to fixed charges, organization expenses and 6 per cent upon the capital stock. In the case of the Western New York & Pennsylvania, the rental will be fixed charges, organization expenses and 5 per cent on the preferred stock and 6 per cent on the common stock.

PERE MARQUETTE.—Equipment Trust Certificates.—This company has applied to the Interstate Commerce Commission for authority for an issue of \$5,100,000 of 4½ per cent equipment trust certificates.

ST. LOUIS-SAN FRANCISCO.—Acquisition.—The Interstate Commerce Commission has authorized this company to acquire control, by purchase of stock, and the St. Louis, San Francisco & Texas to acquire control by lease of the Gulf, Texas & Western, which has a line from

Seymour to Jacksboro and Salesville, Tex., 99.6 miles, and which is to be used as part of a new route for the Frisco and the Rock Island between northern Texas and southwestern Oklahoma and Fort Worth and Dallas, Tex. The commission has also modified its consolidation plan, of December 9, 1929, to assign the G. T. & W., to System No. 19—Rock Island-Frisco, instead of to System No. 17—Santa Fe. The authorization for the purchase of the stock is on condition that the price to be paid shall not exceed \$1,800,000, whereas the Frisco had agreed, subject to approval, to pay \$2,300,000 for 5,000 shares outstanding.

SOUTHERN PACIFIC.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell the remaining \$41,294,000 of an issue of \$61,294,000 of Oregon Lines first mortgage 4½ per cent bonds authorized by the commission in 1927, of which \$20,000,000 have already been sold. It is proposed to sell the bonds to Kuhn, Loeb & Co. at 95 and interest.

TENNESSEE CENTRAL.—Annual Report.—The 1929 annual report of this company shows net income after interest and other charges of \$219,905, as compared with net income of \$123,245 in 1928. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average Mileage operated	296.33	296.33
RAILWAY OPERATING REVENUES	3,330,262	3,256,511	+ 73,751
Maintenance of way	592,339	687,819	— 95,480
Maintenance of Equipment	517,644	444,865	+ 72,779
Transportation	1,167,139	1,155,821	+ 11,318
TOTAL OPERATING EXPENSES	2,514,783	2,545,643	— 30,860
Operating ratio	75.51	78.17	— 2.66
NET REVENUE FROM OPERATIONS	815,479	710,868	+ 104,611
Railway tax accruals	95,424	88,002	+ 7,422
Railway operating income	719,729	622,180	+ 97,549
Hire of freight cars	222,177	223,124	— 947
Joint Facility rents	5,372	5,702	— 330
Non-operating income	32,541	31,057	+ 1,484
GROSS INCOME	752,271	653,238	+ 99,033
Rent for leased roads	62,504	62,504
Interest on funded debt	218,494	210,563	+ 7,931
TOTAL DEDUCTIONS FROM GROSS INCOME	532,366	529,993	+ 2,373
NET INCOME	219,905	123,245	+ 96,660

Average Prices of Stocks and of Bonds

	Apr. 22	Last week	Last year
Average price of 20 representative railway stocks ..	132.46	133.94	131.57
Average price of 20 representative railway bonds ..	93.41	93.45	91.79

Dividends Declared

Georgia Southern & Florida.—1st and 2nd Preferred, 2½ per cent, payable May 29 to holders of record May 15.
Missouri-Kansas-Texas.—Preferred, 1¼ per cent, quarterly, payable June 30 to holders of record June 14.

Railway Officers

Executive

Juan Andrea Almazan, minister of communications of the Republic of Mexico, Mexico City, D. F., has been elected vice-president of the National of Mexico.

Arthur S. Pierce, treasurer and assistant secretary of the Chicago & North Western, has been elected vice-president and assistant secretary, with headquarters as before at New York, succeeding **Samuel A. Lynde**, who has retired after nearly 30 years of service as an officer of that road.

Financial, Legal and Accounting

Harry W. Rush, assistant treasurer and assistant secretary of the Chicago & North Western, has been elected treasurer and assistant secretary. **Carleton H. Vail** has been appointed assistant treasurer and assistant secretary. Both will have headquarters at New York.

Clive C. Handy, heretofore general attorney of the New York Central with headquarters in Cleveland, O., has been appointed general attorney, Buffalo and East division, with headquarters in New York, to succeed **A. S. Lyman**, deceased. **W. N. King**, general attorney will have jurisdiction extended to include that heretofore exercised by Mr. Handy, with headquarters as before at Cleveland, and **William Mann** and **Frederick L.**



Clive C. Handy

Wheeler, assistant general attorneys at New York, have been promoted to principal assistant general attorneys, newly created positions.

Mr. Handy was born at Wauseon, O., in 1873. He represented the Lake Shore & Michigan Southern (now part of the New York Central) as its local attorney at Wauseon for a number of years, and his work there attracted the

attention of the law officers of the Lake Shore (part of the New York Central), who appointed him assistant general attorney, with headquarters in Cleveland, in 1910. Following the resignation of the general attorney in Cleveland, Mr. Handy was appointed to serve in this capacity in 1929. He has been connected with the New York Central since 1900.

Operating

Thomas Summers, chief dispatcher of the Pasco division of the Northern Pacific, has been promoted to trainmaster of the Montana division at Livingston, Mont., succeeding **Carl V. Berglund**, who has been transferred to the Fargo division at Staples, Minn. Mr. Berglund will replace **John E. Hogan**, who has been transferred to the Tacoma division at Tacoma, Wash. **Corbett W. Coil**, division roadmaster of the Fargo division at Fargo, N. D., has been promoted to trainmaster-roadmaster of the Dakota division at Mandan, N. D., succeeding **Harry J. McCall**, who has been appointed trainmaster of the Pasco division at Pasco, Wash. Mr. McCall succeeds **William W. Judson**, who has been transferred to the Idaho division at Spokane, Wash.

J. A. Rogers, assistant superintendent of the Canadian National at Saskatoon, Sask., has been advanced to superintendent with headquarters at Prince Albert, Sask. He was born at Cayuga, Ont., on July 19, 1883. He entered railway service on October 1, 1905, and held the positions of topographer, transitman, leveller, instrumentman and resident engineer, respectively, on the National Transcontinental (now part of the Canadian National) until December 31, 1909, when he resigned to take a position with Mackenzie, Man & Co. In April, 1911, he accepted the position of resident engineer at Edmonton, Alta., in connection with the construction of the Canadian Northern (now part of the Canadian National). On June 1, 1916, he entered the engineering department of the Canadian National at Saskatoon, and until the present time has been in the continuous service of this railroad, except for the period between July 1, and December 17, 1918, while in military service. He has held the positions of division engineer, acting assistant superintendent and assistant superintendent, the position he held at the time of his recent advancement to superintendent.

Clinton G. Sibley, general superintendent of the Atlantic Coast Line at Rocky Mount, N. C., has been promoted to assistant general manager, with headquarters at Wilmington, N. C. He was born on February 13, 1886, at Savannah, Ga., and was educated in the local public schools. Mr. Sibley commenced his railway career in 1899, as a clerk in the transportation department of the Plant System (now the Atlantic Coast Line) at Savannah. From August 1, 1914, to

March 1, 1918, he held the position of trainmaster and during a few months in 1918 he served in the regional director's office, U. S. Railroad Administration. On November 15, 1918, he became superintendent of the Winston-Salem Southbound and on February 28, 1920, he was advanced to general superintendent. From January 20 to September 1, 1921, he served as trainmaster of the Atlantic Coast Line at Lakeland, Fla., and on the latter date he was appointed superintendent at Rocky Mount, N. C. On November 1, 1925, he was promoted to superintendent of transportation at Savannah, Ga., and on June 1, 1927, he became general superintendent at Rocky Mount, N. C., the position he held until his recent advancement.

Fritz A. Hansard has been appointed superintendent of the Ocala district of the Atlantic Coast Line, with headquarters at Ocala, Fla., to succeed **F. B. Langley**, promoted. He was born on December 1, 1882, at Talladega, Ala., and was educated in the public schools



F. A. Hansard

at Chattanooga, Tenn. He entered railroad service in 1902, with the Birmingham Southern Terminal Company at Ensley, Ala., and in September, 1904, became connected with the Atlantic Coast Line serving as trainman. In November, 1905, he was advanced to conductor, and from November, 1922, until his recent appointment he served as trainmaster.

F. B. Langley, district superintendent of the Atlantic Coast Line at Ocala, Fla., has been promoted to superintendent of transportation of the Third division, with headquarters at Jacksonville, Fla. Mr. Langley was born on June 4, 1885, at Camp Hill, Ala. He was educated in the Southern Industrial Institute in Camp Hill; and in 1901, he commenced his railway career with the Central of Georgia. He became connected with the Atlantic Coast Line in 1907, in agency, telegraph and dispatching service at Wilmington, N. C. In July, 1917, he was appointed trainmaster of the Jacksonville district, with head-

quarters at Sanford, Fla. Later in 1917, he was promoted to superintendent and until his recent appointment as superin-



F. B. Langley

tendent of transportation, has served in this capacity on the Tampa, Gainesville and Ocala districts, respectively.

Traffic

E. B. Hickman has been appointed general agent of the Louisiana & Arkansas, with headquarters at Shreveport, La.

F. H. Baird, division passenger agent on the New York Central at Cleveland, Ohio, has been promoted to assistant general passenger agent in charge of solicitation for that road and the Cleveland, Cincinnati, Chicago & St. Louis at the same point. **E. C. Cook**, assistant general passenger agent for the New York Central at Toledo, Ohio, has also been appointed assistant general passenger agent for the Big Four and the Michigan Central at that point.

Francis D. McConnell, whose promotion to assistant freight traffic manager of the Central of Georgia, with headquarters at Savannah, Ga., was an-



Francis D. McConnell

nounced in the *Railway Age* of April 5, was born on February 19, 1882, at Fort Valley, Ga. He was educated in the

public schools of Chatham County, Ga., and commenced his railway career on December 2, 1897, with the Central of Georgia, as a mailing clerk in the general freight office. He held various positions in this office until November 1, 1913, when he was advanced to assistant general freight agent. On December 1, 1916, he was promoted to general freight agent, the position he held until his recent appointment as assistant freight traffic manager.

Engineering, Maintenance of Way and Signaling

The jurisdiction of **W. H. Elliott**, signal engineer of the Exterior zone of the New York Central at Albany, N. Y., has been extended to include the Electric division, with headquarters in New York.

Hugo Heleen, roadmaster on the Rocky Mountain division of the Northern Pacific at Missoula, Mont., has been promoted to division roadmaster of the Fargo division at Fargo, N. D., succeeding **Corbett W. Coil**, promoted.

W. C. Frehse, formerly valuation engineer of the Duluth, Winnipeg & Pacific (now part of the Canadian National) and with the engineering staff of the Minneapolis, St. Paul & Sault Ste. Marie, has been appointed by the Colombian government as Jefe de Comision de Trazados (chief of location) of the Ferrocarril de Carare, with headquarters at Tunja, Boyaca, Colombia, S. A. For the past four years Mr. Frehse has been engaged on construction in Colombia with the Winston Brothers Company and the P. Lyall & Sons Construction Company.

H. B. Dick, assistant valuation engineer of the Baltimore & Ohio, with headquarters at Baltimore, Md., who was retired on February 1, 1930, was born on January 8, 1861, at Hopewell, Ohio. From the time he entered railway service in 1883 until 1902, he held the positions of chainman, rodman, levelman, transitman, draftsman, resident engineer and engineer maintenance of way on the Zanesville & Ohio River and Ohio & Little Kanawha, (successor to the Zanesville & Ohio River), except for short periods when he was connected with the Cleveland, Akron & Columbus, the Shawnee & Muskingum River and the Zanesville Belt Line. On February 1, 1902, he was appointed assistant division engineer on the Baltimore & Ohio, and on May 1 of that same year he was promoted to division engineer. On May 1, 1910, he was promoted to engineer maintenance of way of the Baltimore & Ohio Southwestern, and on June 5, 1912, he transferred in the same capacity to the Cincinnati, Hamilton & Dayton (now operated by the Cincinnati & Lake Erie). On July 1, 1913, he returned to the Baltimore & Ohio Southwestern as district engineer maintenance of way, and on December 13, 1914, he was made pilot engineer in

charge of valuation on the Cincinnati, Hamilton & Dayton. On June 1, 1916, he was promoted to district valuation engineer of the Baltimore & Ohio Southwestern and Cincinnati, Hamilton & Dayton, and on January 3, 1918, he was appointed acting valuation engineer of the Baltimore & Ohio system. On August 18, 1919, he was made assistant valuation engineer of the same road, the position which he was holding at the time of his retirement.

Special

S. W. Fairweather has been appointed director of the Bureau of Economics of the Canadian National, as announced in the *Railway Age* of April 19. He attended McGill University, where he studied engineering, and in 1916 became connected with the Department of Railways and Canals at the car ferry terminals at Borden, P. E. I., as an assistant



S. W. Fairweather

engineer. From April, 1917, until the following year he was assistant engineer on the Quebec bridge and later was advanced to structural engineer and office engineer of the Department of Railways and Canals at Ottawa. In 1923, Mr. Fairweather became connected with the Canadian National, and served in the department of economics. In 1929, he was appointed assistant director of that department, which position he has held until his present promotion.

Bowman H. Moore has been elected to serve as secretary of the Presidents' Conference Committee on Valuation, succeeding **Frederick H. Lee**, deceased. Mr. Moore was born in Philadelphia, Pa., on April 19, 1897, and received his higher education at Girard College, Philadelphia, Pa. Before he became connected with the Presidents' Conference Committee in January, 1917, he had served for several years as cost accountant in a manufacturing plant and in various departments of a national bank. From November, 1919, until his recent appointment he was an analyst in the office of the secretary of the Conference Committee. Mr. Lee was born on May 14, 1869, at Mount Holly, N. J.

Shortly after he was graduated from the University of Pennsylvania Law School in 1894, he accepted a position in the office of the late James Schaperkotter, general counsel of the Lehigh Valley. He was cashier of the Mt. Holly National Bank for a number of years, and before he became connected with the Presidents' Conference Committee in February, 1916, he was in the employ of the Title Insurance Company in Boston, Mass. He was appointed secretary of the committee on October 21, 1918.

Obituary

Harry I. Miller, former president of the Chicago & Eastern Illinois, died on April 22 at his home in New York, after an illness of several weeks.

Charles M. Andrews, assistant superintendent of the Missouri Pacific at Fort Smith, Ark., died in that city on April 18 at the age of 72 years, following a years' illness.

David H. Martyn, who retired as division superintendent of the Pullman Company at St. Louis, Mo., in 1912, died at Minneapolis, Minn., on April 17 at the age of 81 years. Mr. Martyn was born at Detroit, Mich., and entered railway service at the age of 14 years as a telegraph operator on the Missouri Pacific at St. Louis. Later he served as an operator with the Western Union Telegraph Company, entering the employ of Pullman's Palace Car Company (now the Pullman Company) in 1872 as a receiving cashier. He was promoted to assistant superintendent and then to superintendent, serving in the latter capacity in charge of the Southwestern division of that company and the Pullman Company at St. Louis until 1912.

William A. Whitney, former general superintendent of the Oregon Short Line and a vice-president of several short lines in the Northwest, died at San Francisco, Cal., on April 16 at the age of 72 years. Practically his entire railway career had been spent with the Union Pacific system. Mr. Whitney had served successively as assistant superintendent on the Union Pacific at Laramie, Wyo., and superintendent at Cheyenne, Wyo., superintendent of the Rio Grande Junction (now part of the Denver & Rio Grande Western) at Grand Junction, Colo., division superintendent of the Union Pacific at Ogden, Utah, and division superintendent of the Southern Pacific at Sacramento, Cal. In 1915 he was appointed general superintendent of the Oregon Short Line at Pocatello, Idaho, where he remained until the following year when he was appointed superintendent of transportation of the Union Pacific at Omaha, Neb. Mr. Whitney served for various periods from 1917 to 1927 as general manager and then vice-president of the Ogden, Logan & Idaho, and its successor, the Utah-Idaho Central, the Mount Hood and the Sumpter Valley at Ogden.

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Motor Transport Section

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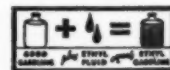
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ETHYL GASOLINE

Trucking Developments Coming to Fore

WHILE important developments continue in the motor coach field, centering mainly around the pending interstate regulatory legislation, motor truck news has also recently come more prominently to the fore. Much of this latter is of vital interest to railways seeking ways and means of meeting the problems of increased highway competition for freight traffic.

During the past month another railway, the Reading, already an important motor coach operator, has entered the trucking field. Through its highway subsidiary, the Reading Transportation Company, it has installed a station-to-station trucking service on a 40-mile route in Pennsylvania. The New York Central, following an adverse decision of the Ohio Supreme Court regarding its contract trucking relationships (see *Motor Transport Section* of March 22, page 743) is seeking to continue its highway freight service in that state by application to the Public Utilities Commission for a certificate to operate over the route affected by the court's ruling. Recent reports also state that the Pacific Motor Transport Company, highway subsidiary of the Southern Pacific and the Pacific Electric is seeking new motor truck operating franchises on California routes; heretofore this company had confined itself to an "express" type of operation consisting of store-door pick-up and delivery, the line haul on such shipments being carried out by rail.

On the other side of the picture is the Northern Pacific which was recently prevented by the Minnesota Railroad and Warehouse Commission from installing a trucking service along its lines in that state. This has caused the railroad to abandon its trucking plans so far as Minnesota is concerned although it may install trucks in other states served by its rail lines. Along the same line is the recent ruling of the Ohio Public Utilities Commission holding that the Railway Express Agency, Inc., without a certificate of public convenience and necessity, was not entitled to operate motor trucks between communities where the railroad service previously used by the express company had been discontinued.

Then there are recent reports of attempts by railroads to prevent motor truck competition by recourse to the courts. Some of these are successful at least temporarily or until the independent meets certain legal stipulations;

in others the petitioning railways are given little consideration. Of the latter type is the recent Louisiana case wherein the Yazoo & Mississippi Valley, alleging that it was adequately serving the territory involved, sought to prevent the issuance of a certificate to an independent trucker. The Louisiana Supreme Court ruled against the railroad and upheld the State Public Service Commission in its issuance of the permit.

Finally there is news of another nature, notably the announcement that the Motor Truck Department, National Automobile Chamber of Commerce, has inaugurated an extensive educational campaign designed to promote transportation by motor trucks in the United States. Another recent publicity release of this same organization quotes, from U. S. Department of Agriculture reports, figures which reveal that motor trucks are moving 65 per cent of the fruit in southern Indiana; 23 per cent in southern Illinois; 53 per cent in Virginia and 16 per cent in Delaware and Maryland. These are statistics similar to those which drew, from a delegate to the February, 1929, meeting of the Motor Transport Division, the observation that "the loss sustained because of motor coaches is nothing compared to the loss which will be sustained by railways because of trucks if something is not done about it."

His prediction is evidently being borne out in subsequent developments. At the same time many railways as indicated at the outset are alive to the situation and are coming to the realization that highway competition for freight traffic is basically the same as that for passenger traffic. The way to meet the former is for the railways to install motor truck service just as the operation of motor coaches has been found to be the proper weapon with which to combat the latter. Attempts to litigate competitors off the highway are but temporary expedients; competition so checked usually returns. The case for serious consideration of motor truck service was well put in the report of regional committee No. 6 at the Toronto meeting of the Motor Transport Division. One feature of this report was cited in an editorial entitled "Traffic Considerations in Freight Trucking" which appeared in the *Railway Age* of December 28, 1929, page 1461. It might be well, nevertheless, in view of the

recent prominence of motor truck news, to re-emphasize this committee's pertinent conclusion which held that "the establishment of trucking subsidiaries to give service similar to those of private trucking companies in territories where trucking companies are real competitors of the railroads might well have the serious consideration of railway executives."

Shop Cleanliness Pays a Profit

AUTOMOTIVE repair shops, as a rule, accept dirt as inevitable. There may be several reasons for a repair shop being dirty occasionally, but it need not be littered with the accumulation of several months. Modern management has found that clean surroundings for employees have a direct effect on production, that a higher type of workmanship is secured in plants that stress orderliness and cleanliness. Dirty surroundings encourage careless work and reflect haphazard management. Clean surroundings inspire the employee to the belief that nothing but the best is acceptable, and that he is working for an up-to-date organization.

All parts which have been removed from a vehicle should be promptly repaired or thrown out as scrap, and should not be allowed to accumulate in corners and under benches. The floor should be scraped frequently, and an efficient cleaning material used. Dirty, oil-soaked floors are a constant fire hazard and are frequently the cause of serious accidents. The added expense of keeping a shop clean need not be excessive if it is properly supervised, and the increased production and better work done will more than balance the cost.

Finding Next Year's Executives

AUTOMOTIVE transportation needs more technically-trained men who have gone "through the mill" and who thoroughly understand the problems involved in operation and maintenance. Particularly in the field of maintenance, the background of a technical training which enables an officer to understand the limitations of a given design will also show him what can be done to eliminate premature wear and breakdown. A technical man should be in a position to know why one grade of gasoline will give better results than another in a certain type of engine operating under unusual conditions. To keep old equipment running so that it will compare favorably with the latest products of the manufacturers requires a knowledge of materials and processes that is not found as often as might be desired in maintenance personnel. As operations become larger, the need for engineering experience increases.

Large fleet operators should not overlook the fact that among the new technical college graduates are potential motor transport executives, who want only the opportunity to develop into trained officers of the sort that are now often hard to find. Every graduating class of an

engineering college contains men who would be attracted to the field of highway transportation if an opportunity were given them really to learn it from top to bottom. These men usually seek a chance to learn, rather than high initial wages.

At any rate, a large fleet operator could lose nothing by obtaining, as an experiment, the services of one or two of these men and giving them the practical training necessary to make effective their technical schooling. Men with a background of technical education and the further advantage of practical training are already needed, and the demand for them will grow as motor transportation continues its rapid development.

The Status of Regulation

RADICALS in Congress have objected to almost every feature of the proposed regulation of interstate motor coach transportation, saying that only the "big fellows" and the railroads want the legislation—that there is no "public" demand for it. If the fact that interests concerned in a public service enterprise can agree amicably with each other as to the kind of regulation they need must subject them to suspicion, then the only alternative method of bringing about regulation would seem to be for the industry to descend into chaos to attract public attention.

Be that as it may, however, if these suspicious legislators fear that to pass the motor coach bill in its present form will be unduly favoring the railroads, they may, in our opinion, set their minds at rest. The railroads in striving for an agreement with the other interests which sponsored this legislation carried the spirit of compromise to its full elastic limit. To the best of our knowledge the measure still has railroad approval, but it is nevertheless true that the bill in its present form offers little in the way of regulating their highway competition.

If continued support by the railroads of this measure, which grants so little to the railroad interest, is to continue to subject the railroads to unmerited and ill-informed criticism, then we doubt if the bill is worth it. The state legislatures of practically all the states have found motor coach regulation necessary and beneficial. If Congress is still too timid to take a similar step, without setting up a hedge of restrictions regarding ownership of such lines and the maintenance of an archaic policy of enforcing competition such as no state has found necessary or desirable—then, in our opinion, so much the worse for Congress.

We admire the loyalty of the railroad men who have continued to support this bill while it grew less and less promising as a measure to bring justice to government dealings with competing forms of transportation. At the same time we cannot escape the opinion that there now is little in the measure from a railroad point of view to warrant their accepting a burden of abuse as the price of supporting it.

Motor Coach Bill Before Senate

Amendments adopted by committee designed to induce competition with railways

By Harold F. Lane

Washington Editor, *Railway Age*

WASHINGTON, D. C.

AFTER five years of effort in and out of Congress to bring about legislation for the federal regulation of interstate motor-carrier operations on the public highways, the sixteenth bill of a series introduced in Congress for that purpose was passed by the House on March 24 and is now awaiting its turn on the Senate calendar, having been favorably reported, although with important amendments, by the Senate committee on interstate commerce on April 14.

The bill in its final form is H.R. 10,288, sponsored by Chairman James S. Parker of the House committee on interstate and foreign commerce, but almost completely rewritten by the committee after extensive hearings, further revamped during the debate in the House, and still more drastically amended by the Senate committee. The latter held no hearings after the bill had passed the House, although some of the railways had asked for an opportunity to be heard on some of its provisions, but it considered a number of written communications on various phases of the bill during three executive sessions.

It is rather hazardous to make predictions as to what the Senate will do with a bill on which most of the hard work has been done on the other side of the Capitol, and as a result of the long squabble over the tariff the Senate is in a state of congestion that makes it easy for a small minority to defeat legislation by threatening to consume time on it, but the steering committee has listed the bill among the few on its program for consideration in the month or so remaining before adjournment and the fact that the bill was so promptly reported by the committee is regarded as an indication that there may be comparatively little opposition when the bill is brought up in the Senate. On the other hand, if the committee amendments should be adopted in the Senate they would encounter some opposition when the bill goes back to the House and if they are not accepted by the House and the bill goes to conference it will be difficult to reach an agreement satisfactory to both Houses.

Nature of Senate Changes

Moreover the changes made by the Senate committee are of a nature intended to remove the kind of opposition which was voiced in the House, where the vote was 219 to 115, although by the same token the bill is now far less desirable to some of those who originally sought such legislation.

Railway men who have been advocating federal regulation of motor carriers on the ground that they should not be subjected to unrestricted and unregulated competition will have that wish fulfilled, so far as passenger service is concerned, if the bill becomes a law. On the other hand the earlier drafts of the proposed legislation, joint efforts of representatives of the motor-carrier interests, the railways and the state commissions, have passed through a whole series of processes designed to attract the votes of those who had not the slightest desire to give any aid or comfort to the railways, as well as of those

who were suspicious of a form of regulation proposed by those who were to be regulated.

All thought of applying the proposed regulation to motor trucks was abandoned by the House committee very early in its consideration of the bill, and only passenger carriers are included. To meet the objections of those who feared that the Interstate Commerce Commission might be too much inclined to protect railways from competition a proviso was then inserted that the provisions of the transportation act are not to be construed as giving any preference to rail or water transportation over motor vehicle transportation. It was also provided that no rate shall be held to be unjust or unreasonable "on the ground that it is unjust to a competing carrier engaged in a different kind of transportation."

Competition With Railways to Be Promoted

The House adopted an amendment directing the commission to give consideration to another applicant for a certificate whenever the only existing service on a given route is furnished by a company connected with a railway and the Senate committee went a step farther by adopting a substitute amendment providing that absence of motor vehicle service or of actual competition on any route shall be considered sufficient evidence that public convenience and necessity will be served by the granting of a certificate. As a final step the committee adopted another amendment, to the section which authorizes the Interstate Commerce Commission to approve consolidations, prohibiting a consolidation or acquisition of control involving motor vehicle carrier where one or more of the parties is engaged, directly or indirectly in the transportation of persons by railroad. It is understood also that in the Senate an effort will be made to require railways now controlling motor-coach lines to give them up.

Administrative Features

The administrative provisions of the bill also have passed through many changes. Originally it was intended to leave most of the detail of the regulatory process to joint boards representing the states, but acting under authority of the Interstate Commerce Commission. It was felt, however, that federal powers could not be delegated to the extent originally contemplated and as the bill now stands the joint boards may merely make recommendations which may become orders of the commission if it finds it unnecessary to change them after 20 days. It was also proposed to give individual commissioners or examiners of the Interstate Commerce Commission power to decide cases, but this also was changed to a recommendation, to become effective if not stayed or postponed. If exceptions to the recommendations of a commissioner, examiner or joint board are filed, however, the commission is required to consider them, and, if sufficient reason appears therefor, to grant a review or

authorize further proceedings. It is believed that, at least during the early stages of the working out of the regulatory plan, the federal commission will find plenty of occasions to consider exceptions to the recommendations made. The House bill provided that a recommend order should become effective after 10 days, but the Senate committee enlarged the period to 20 days.

As reported to the House the bill provided for joint boards only in cases where only two states were involved but the House greatly multiplied the number of joint boards by providing for reference to them of cases involving not more than three states.

The "Grandfather Clause"

By successive amendments the date of the "grandfather clause" has been changed from January 1 to March 1 and April 1, so that carriers in bona fide and regular operation on that date may be granted certificates merely upon making the proper showing by a return to a questionnaire.

Minority Report

A minority report recommending that the bill be amended by striking out the provisions requiring an application for a certificate of public convenience and necessity was filed in the Senate on April 18 by five members of the Senate committee, Senators Dill, of Washington; Pine, of Oklahoma; Brookhart, of Iowa; Wheeler, of Montana; Howell, of Nebraska; and Pittman, of Nevada. They took the position that the demand for such provisions comes from the railroad and motor coach owners now operating and that there is no such demand from the public. Objection also is made that the present operators "in practically all cases will be permitted to continue in complete control of interstate motor coach business for a considerable period of time and probably permanently" while it is stated that new applications will take a long time for consideration.

The adoption of the amendment they propose, the minority report says, "will still make it necessary for the carrier by motor vehicle in interstate or foreign commerce on any public highway to secure a permit from the Interstate Commerce Commission, but it will not necessitate the long and laborious and tedious hearings and contests that will inevitably come if the certificate of public convenience and necessity provisions remain in this bill."

Following are extracts relating to the principal provisions of the bill taken from an analysis of the House bill and the committee amendments included in the report of the Senate committee:

Analyses of the House Bill and

Senate Committee Amendments

Section 1: This section defines many of the terms used. From these definitions it will be seen that the act will cover only the carriage of passengers, and not the transportation of property except in so far as such transportation may be incidental to passenger carriage. A reading of paragraphs (10) and (11) of section 1 will show that carriers of persons are divided into two classes, common carriers by motor vehicle and charter carriers by motor vehicle, and throughout this distinction is preserved for the purpose of applying, generally speaking, a different type of regulation to the two classes of carriers. The provisions with respect to securing a certificate of public convenience and necessity, the requirement that rates shall be just and reasonable, and the requirement that the approval of the commission must be obtained in the case of consolidations, mergers, and acquisition of control, do not apply in the case of charter carriers.

It will be seen from the provisions of subsection (b) that certain types of carriers by motor vehicle will be exempted from the provisions of the act. One of these exemptions is in the case of taxicabs and other motor vehicles performing a

similar service, even though they may not make use of taximeters. This exemption, however, is confined to taxicabs and nonmeter cabs having a capacity of not more than six passengers. Other vehicles exempted are hotel busses and school busses.

Section 2: By this section the commission is directed to supervise and regulate common carriers by motor vehicles as provided in the act and to that end it is authorized to establish reasonable requirements with respect to continuous and adequate service at just and reasonable rates, a uniform system of accounts and reports, qualifications and maximum hours of service of employees, safety of operation and equipment, comfort of passengers, and pick-up and delivery points. The commission is also directed to supervise and regulate charter carriers by motor vehicle, being specifically authorized to establish reasonable requirements with respect to qualifications and maximum hours of service of employees, safety of operation and equipment, and comfort of passengers.

Section 3: The general administrative scheme is set forth in this section. The commission itself will be primarily charged with the administration of the act. However, the commission is authorized to act through individual members and examiners upon any matter, and, in case of any such matter involving operations by common carriers by motor vehicle in not more than three states, is required to refer the matter to a joint board, if it concerns certificates of public convenience and necessity for new operations, rate complaints, consolidations, mergers, and acquisitions of control, complaints as to violations of safety requirements, or certain other specified matters.

Members of joint boards are to be appointed by the commission upon nomination by the state utility boards or by the state governors. The method of choosing the members of joint boards was adopted with a view to securing men conversant with local conditions and experienced in motor-vehicle transportation problems. If the board or governor of any state fails to designate any member, the matter is to be handled by the commission. Any such joint board is to be, as declared in the act, an agency of the federal government while acting under the provisions of this act. The expenses, but not the salaries, of joint-board members are to be paid by the federal government.

The House bill provided that when any matter is heard and decided by a member, examiner, or joint board, such member, examiner, or joint board is to file with the commission its recommendation for an appropriate order, and after having been filed with the commission 10 days, such recommended order becomes the order of the commission, except that the commission may, before the expiration of such time, stay or postpone such recommended order. No provision was made for service of the order of the examiner upon interested parties. The committee amendments do not provide for a decision but for only a recommended order by the member, examiner, or joint board, and further provide that such recommended order shall be filed with the commission and served upon the parties of record and upon the governor and board of any State in which the carrier operations involved in the proceeding are or are proposed to be conducted, and that if no exceptions are taken thereto within 20 days after service upon such person, the recommended order shall become the order of the commission and become effective, unless within such period the order is stayed or postponed by the commission.

The bill further provides that where exceptions are filed within the prescribed period it shall be the duty of the commission to consider them, and, if sufficient reasons appear, to grant a review. No time limit for review is fixed, and it is contemplated that this feature will be taken care of by regulations of the commission. The commission will be under a duty to grant such review as may be necessary or proper to carry out the purposes of the act. The commission is authorized to review any such matter on its own initiative. It is important to note that the orders recommended by an examiner or member, or a joint board, do not become effective as orders of the member, examiner, or joint board, but as orders of the commission, either after the expiration of the 20-day period above referred to or by substitution of the commission's own order upon review.

Subsection (g) authorizes the commission to confer with and to hold joint hearings with state authorities in connection with any matter arising under the act, and authorizes the commission to avail itself of the cooperation, service, records, and facilities of any state or of any officials thereof in the enforcement of the act.

Subsection (h) provides that in the case of a final order under the act the same right of relief in court may be had by any party in interest as is provided in the case of orders of the commission made under the interstate commerce act, as amended.

Section 4: In this section is found the general requirement

that common carriers by motor vehicle operating in interstate and foreign commerce must secure certificates of public convenience and necessity. A period of grace of 90 days is provided for the making of application in the case of carriers in operation when the act goes into effect.

Section 5: In subsection (a) of the House bill provision was made for the issuance of certificates of public convenience and necessity for operations of common carriers by motor vehicle where it is found such operations will serve the public convenience and necessity.

The committee amendment requires as an additional prerequisite to the granting of a certificate of public convenience and necessity the finding that the applicant is fit, willing, and able properly to perform the services proposed and to conform to the provisions of the act and the requirements, rules, and regulations of the commission.

In subsection (b) of the House bill it was provided that common carriers by motor vehicle which were in operation on March 1, 1930, and which have continued to operate since that date and which meet certain other requirements set forth, shall be entitled to certificates as a matter of course, without the application of the test of public convenience and necessity, provided that the applicant possesses the qualifications set out in the committee amendments to subsection (a). The date was changed by the committee from March 1, 1930, to April 1, 1930. The question of the issuance of these matter-of-course certificates is left to the decision of the commission without hearing, upon the basis of information furnished by questionnaires or otherwise. However, if it is found necessary to have further proceedings to determine the question involved, the application for the certificate is to be dealt with according to the procedure set forth in section 3, including reference to a joint board in a proper case.

In subsections (c) and (d) are found declarations of policy to make it clear that Congress gives no preferential recognition to any one of the various kinds of transportation, and that a certificate shall not be construed as conferring any proprietary or exclusive rights in the public highways. By subsection (e) the commission is directed, in so far as is consistent with the public interest, to preserve competition in service.

Subsection (f) of the House bill provided that if motor-vehicle service in interstate or foreign commerce on a public highway is alone carried on by a railroad company or persons or corporations owning an interest in a railroad company, the commission shall give consideration to the issuance of a further certificate to a common carrier by motor vehicle if applied for by a person or corporation not interested in a railroad company and otherwise qualified. By the committee amendment this subsection is stricken out and the present subsection (f) substituted. This subsection, which is intended to insure competition in motor-vehicle transportation, provides in substance, that if upon consideration of an application for a certificate of public convenience and necessity it appears either that there is no adequate service by a common carrier by motor vehicle or no actual and adequate competition by common carrier by motor vehicle, in whole or in part, upon the route or between the termini covered by the proposed operations, the absence of such service or competition shall be sufficient evidence of public convenience and necessity and a certificate shall be issued to the applicant if otherwise qualified. The amendment further provides that competition shall not be deemed to be actual unless in good faith between at least two common carriers by motor vehicle that are not affiliated, directly or indirectly, through stock ownership or control, or in any other manner.

Section 6: This section provides that the routes over which and the fixed termini between which common carriers by motor vehicle are authorized to operate shall be specified in the certificate, and provides for attaching terms and conditions in connection with the issuance of the certificate, including terms and conditions as to the furnishing of additional service over the specified routes or between the specified termini, and the extension of the line or lines of the carrier, and terms and conditions necessary to carry out with respect to the operations of the carrier the requirements established by the commission with respect to continuous and adequate service at just and reasonable rates, a uniform system of accounts and reports, qualifications and maximum hours of service of employees, safety of operation and equipment, comfort of passengers, and pick-up and delivery points.

Section 7: All motor carriers of persons operating in interstate commerce other than as common carriers, must, under this section, obtain charter carrier permits. As in the case of carriers required to secure certificates, these carriers are given a period of 90 days in which to apply for charter carrier permits. Such a permit is required for such operations even in the case of common carriers by motor vehicle already holding certificates. The granting of such a permit is virtually a formality, the requirements to be met being very limited, and no test as

to the public convenience and necessity or the public interest is applied. The charter carrier is, however, required under section 10 to take out security for the protection of the public. The commission is directed to specify in the permit the operations covered thereby. Protection of the public is further insured by the provisions made for attaching terms and conditions to the permit, from time to time, in order to carry out with respect to the operations of the carrier the requirements established by the commission with respect to qualifications and maximum hours of service of employees, safety of operation and equipment, and comfort of passengers.

Section 8: Under this section certificates of public convenience and necessity and charter-carrier permits will be subject to suspension, change, or revocation for failure to comply with the provisions of the act, or with orders, rules, or regulations, or terms or conditions of the certificate or permit, or whenever the public interest shall so require.

It is provided that certificates and permits may be transferred, except that transfers of certificates are subject to the approval of the commission as provided in section 9.

Section 9: Under this section consolidations, mergers, and acquisitions of control involving carriers who will be required under the act to obtain certificates of public convenience and necessity will be invalid unless approved by the commission. In the case of approval of any such matter by the commission, and in the case of the original issuance of certificates of public convenience and necessity, it is provided that, in so far as may be necessary to enable the carrying into effect of the consolidation, merger, or acquisition approved, and to permit the conduct of the operations authorized by the certificate, the federal anti-trust laws and all other restraints and prohibitions of federal or state law are inapplicable.

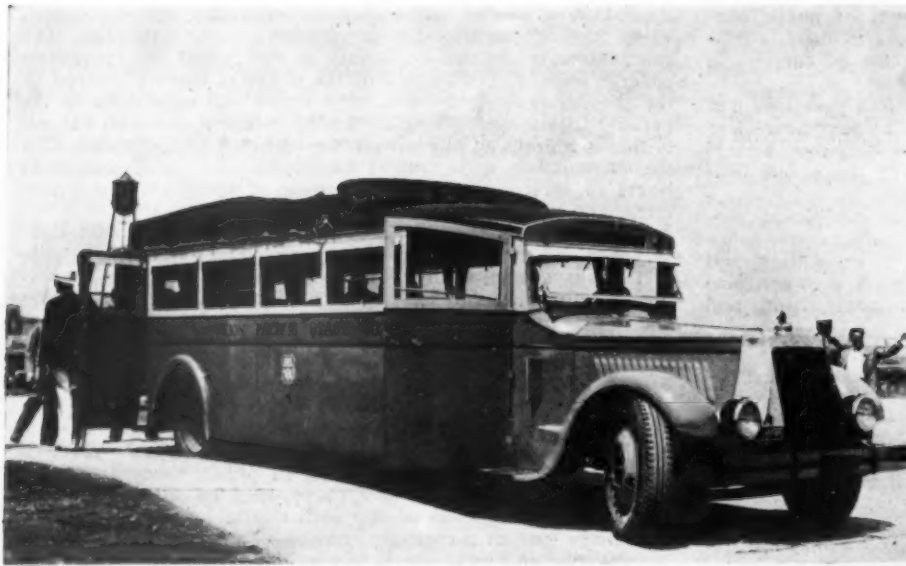
Under subsection (c) of the House bill it was provided that no consolidation, merger, or acquisition of control shall be approved under this section if more than one of the corporations involved is engaged, directly or indirectly, in the transportation of persons by railroad. By the committee amendments it is provided, first, that no consolidation, merger, or acquisition of control shall be approved if it involves the consolidation or merger of two or more railroad carriers or the acquisition of control of one railroad carrier by another; and second, that no consolidation, merger, or acquisition of control shall be approved if one or more of the corporations involved is engaged, directly or indirectly, in the transportation of persons by railroad. The effect of the last clause of the amendment is to prevent any consolidation or merger of a motor-vehicle carrier and a railroad carrier and the acquisition of control of a motor-vehicle carrier by a railroad carrier, or vice versa.

Section 10: This section authorizes the commission to adopt rules and regulations governing the filing of bonds, policies of insurance, or other securities or agreements so as to insure the payment of final judgments recovered against both common carriers by motor vehicle and charter carriers by motor vehicle, when their liability results from the operation, maintenance, or use of motor vehicles under a certificate or permit. The protection extends to cases of death of or injury to persons or loss of or damage to property.

Section 11: This section requires that tariffs of rates, fares, and charges shall be posted, prohibits discrimination in connection with rates, fares, and charges demanded of persons, and prohibits changes in rates, fares, and charges except after 30 days' notice.

Under this section it is declared that rates, fares, and charges shall be just and reasonable, and provision is made for the making of complaints with respect to unjust and unreasonable rates, fares, and charges. It is contemplated that in accordance with the procedure provided for, rates, fares, and charges may be declared unjust and unreasonable and appropriate orders issued, but the commission may not fix any rate, fare, or charge. It is provided that no consideration shall be given to the value of the certificate under which a carrier is operating; or to good will or earning power; or by committee amendment, to going value, in determining the value of the carrier's property in any proceeding to determine the justness or reasonableness of any rate.

A TOTAL OF 26,501,443 MOTOR VEHICLES were registered in the United States in 1929, according to statistics recently issued by the Bureau of Public Roads, U. S. Department of Agriculture. License fees, registration fees, permit fees, fines, and other assessments levied upon these vehicles during the year amounted to \$347,843,543. The registration figure includes passenger automobiles, taxicabs, motor coaches, trucks, tractors, trailers, and motorcycles, and represents an increase of 2,008,319 vehicles, or eight per cent over the 1928 figure; the fees collected represent an increase of \$25,213,518 over 1928.



A Union Pacific Stages Motor Coach Operating Between Salt Lake City, Utah, and the Pacific Northwest

U. P. System Motor Coach

On its Highway Lines Between



The Union Motor Coach Station at Ogden, Utah



Left—Looking Toward the Street from the Waiting Room, Union Pacific Stages Station at Ogden, Utah



Recently Completed Garage and Station of Interstate Transit Lines at Las Vegas, Nev.



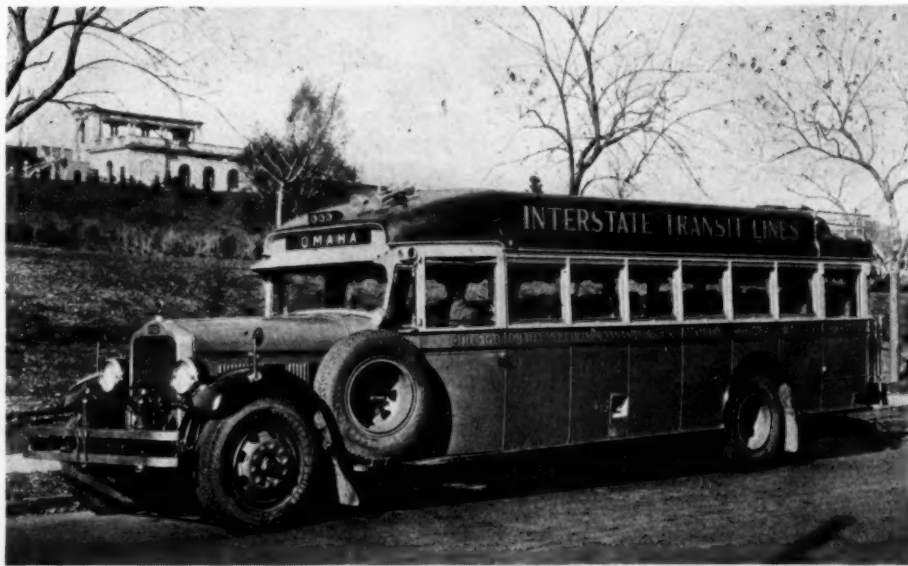
Loading Quarters at Rear of Motor Coach Station, Salt Lake City, Utah

Motor Coaches and Stations between Middle West and West Coast



Motor Coach Station at Omaha, Neb.

Right.—A Corner of the Los Angeles Station of the Interstate Transit Lines



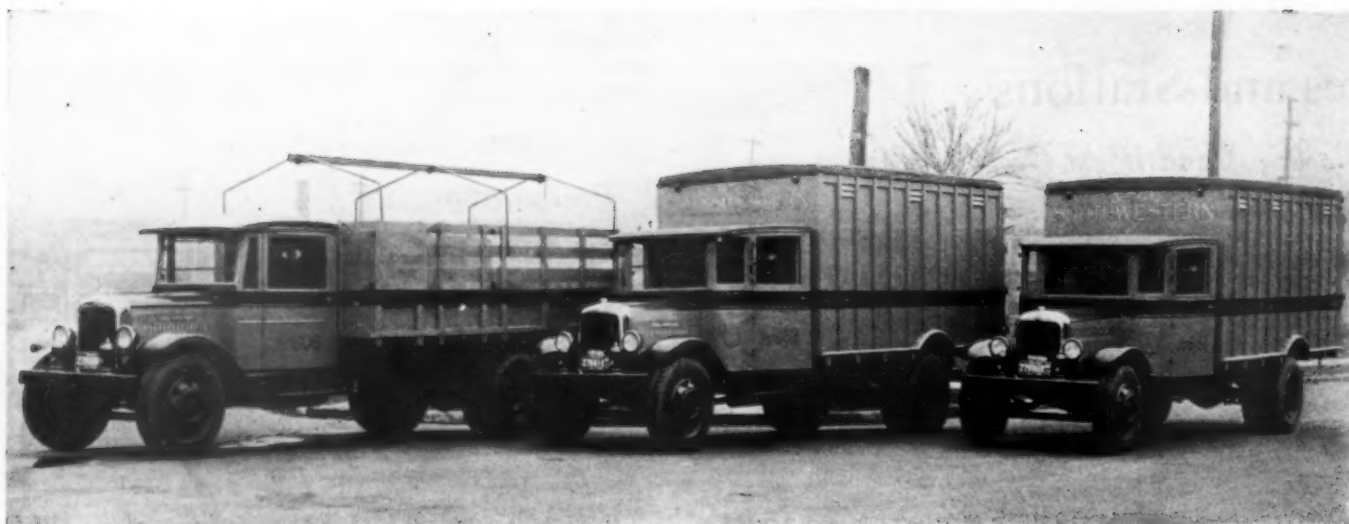
An Interstate Transit Lines Motor Coach—This Company Operates from Chicago and St. Louis via Omaha and Kansas City Respectively to Denver, Cheyenne, Salt Lake City and Los Angeles



at Rear of Motor Coach, Union Motor Station, Salt Lake City, Utah



The Boise, Idaho, Station of the Union Pacific Stages Is Commodious and Completely Equipped



Operating a Co-ordinated Rail-Motor Truck Service

Methods employed by Southwestern Transportation Company, Cotton Belt subsidiary, in providing freight service over 1,285 miles of highways

THE St. Louis Southwestern, through its motor transport subsidiary, the Southwestern Transportation Company, operates a larger system of highway freight transportation lines, in proportion to its size, than any other railway in this country. In a little over a year, this road has placed in service a large number of motor trucks, tractors and trailers for the transportation of freight over 1,285 miles of highways in its territory. At the same time, the Cotton Belt has been establishing motor coach services, until it now has 1,178 miles of motor coach lines.

This highway service has been developed in accordance with the plan of the St. Louis Southwestern to

render a complete and co-ordinated railway and highway service in all parts of its territory. The extent to which this program has been carried out is indicated by the fact that the St. Louis Southwestern and the St. Louis Southwestern of Texas have a total railway mileage of 1,748, while their motor coach route mileage is now 1,178 and their motor truck route mileage, 1,285.

Close Co-operation with Railway

To a certain extent the motor truck operations of the Cotton Belt are competitive with its railway operations; in other words, the Southwestern Transportation Company's equipment carries freight under the transportation company's tariffs all the way from shippers to consignees, no rail haul being involved. On the other hand, the transportation company's schedules are co-ordinated with those of the railway, railway facilities are used by the transportation company, and in numerous instances, when time will be saved thereby, shipments moving under the billing of the transportation company are actually handled by freight car over the railway lines for a portion of the haul.

At the present time the Southwestern Transporta-



Canvas Covers Protect Contents of Open-Top Vehicles

tion Company is operating 97 pieces of equipment in connection with its freight-transportation operations. The majority of these are motor trucks of various sizes, but there are also in the fleet several tractors, semi-trailers and trailers. As indicated on the map of the Cotton Belt's highway lines, which is reproduced herewith, the transportation company is operating between Malden, Mo., and Jonesboro, Ark., and then from Little Rock, Ark., Stuttgart and Gillett to nearly all points in Arkansas and Texas served by the railway. Among its more important terminals, in addition to those mentioned, are Pine Bluff, Ark., Camden, Ark., Texarkana, Mount Pleasant, Tex., Marshall, Tyler, Henderson, Lufkin, Corsicana, Waco, Greenville, Sherman, Dallas and Fort Worth. The company holds certificates, granted by the Arkansas Railroad Commission, permitting it to operate motor coaches and trucks between Stuttgart and Jonesboro. However, road conditions between these points are now such that regular operations cannot be carried on over this highway, and until it has been improved, the transportation company will be unable to fill in this gap on its line.

Four Types of Operation

Four methods of operation of its freight transportation service have been developed under the operating plan of the transportation company. First is the pick-up service in terminals, which is provided by trucks of light capacity. These trucks carry shipments between the stations of the transportation company and the doors of shippers and consignees. Store-door collection and delivery service is provided at all points, but shippers and consignees may use it or not as they prefer. The rates charged by the transportation company



Trucks Are Operated on Regular Daily Schedules

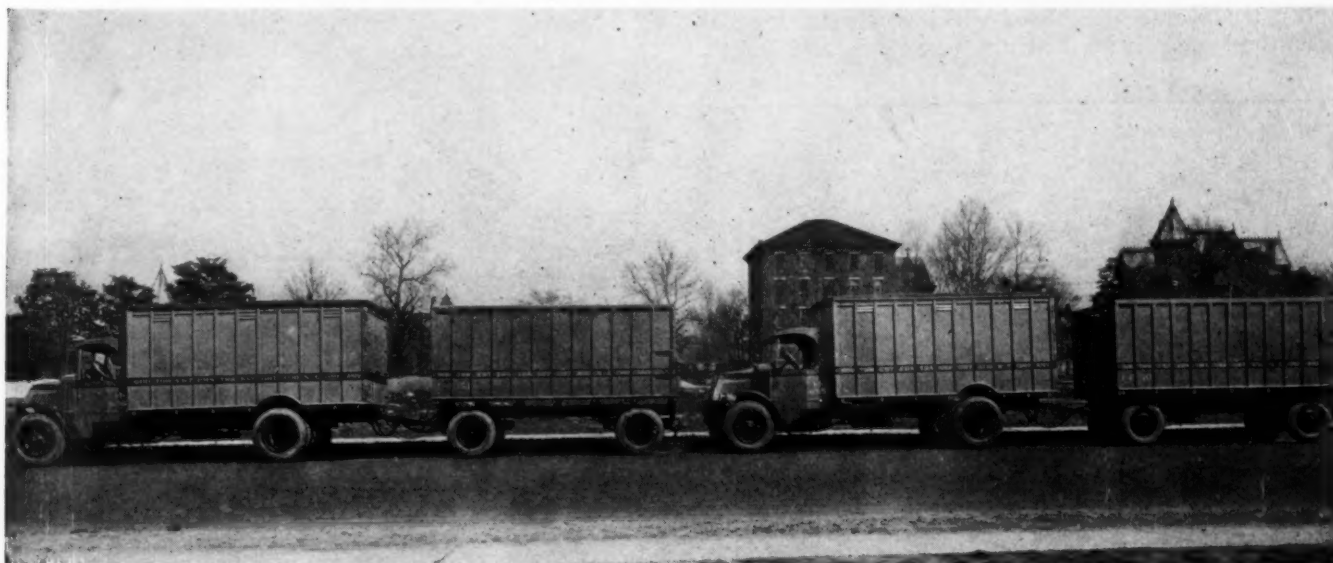
are slightly higher than the rates for transportation between the same points on the railway, due largely to the store-door collection and delivery service which is provided by the transportation company.

The second form of operating procedure of the transportation company is its regular inter-city motor truck freight service, carried on with its larger equipment. Pick-up and delivery work is handled by these larger trucks, tractors and trailers only in the small towns where the amount of freight to be picked up or delivered does not justify the operation of a special light truck.

The third type of operation of the transportation company is the movement of trailers, loaded with freight on transportation company billing, on flat cars of the railway. The fourth type is the movement of shipments offered to the transportation company as freight in ordinary box cars of the railway.

Operating Situation Decides Forwarding Method

The last two plans carry out the idea of co-ordination of railway and highway service, which is the principal



The Fleet Includes 33 Trucks and 30 Trailers

characteristic of the transportation company's operations. The question of how freight routed via the transportation company's lines will be handled—that is, whether it will be handled by the trucks in the ordinary way, in trailers on flat cars, or in box cars—depends upon the needs of the shipper and the operating situation. It is left to the agents of the transportation company, located at important terminals, to determine the most advantageous means of transportation of freight brought to them. Between Little Rock, Ark. and Stuttgart, for example, there is not a convenient daylight rail schedule for l.c.l. freight, but the transportation company operates a truck over this line on a day schedule. Shipments for Stuttgart, which are received in the morning at the transportation company's station in Little Rock, are therefore forwarded by truck. At night, however, there is a convenient rail service, so that shipments received by the transportation company in the late afternoon are forwarded by box car between the rail stations. The remainder of the movement, if store-door delivery is desired, is handled in the transportation company's pick-up trucks. In other words, the transportation company's trucks, in general, do not duplicate railway schedules; on the contrary, railway schedules when available are utilized, and the transportation company's schedules are used to fill in the gaps in the railway runs.

Trailers Operated as Needed

The motor trucks of the transportation company are operated on regular daily schedules. These schedules are changed frequently until the best possible basis is worked out. The two points considered in establishing schedules are the time at which the trucks will reach each point on the line, and the time available for the servicing of the equipment. Trailers, however, of which the company has a substantial fleet, are handled more or less like box cars on the railway. In other words, if they are loaded, they are moved, and if they are not loaded, they are not moved, unless operation conditions require dead heading of trailer equipment. The schedules themselves do not call for trailer movement. The trailers are used only when the scheduled motor trucks do not have the capacity to handle all of the freight on hand.

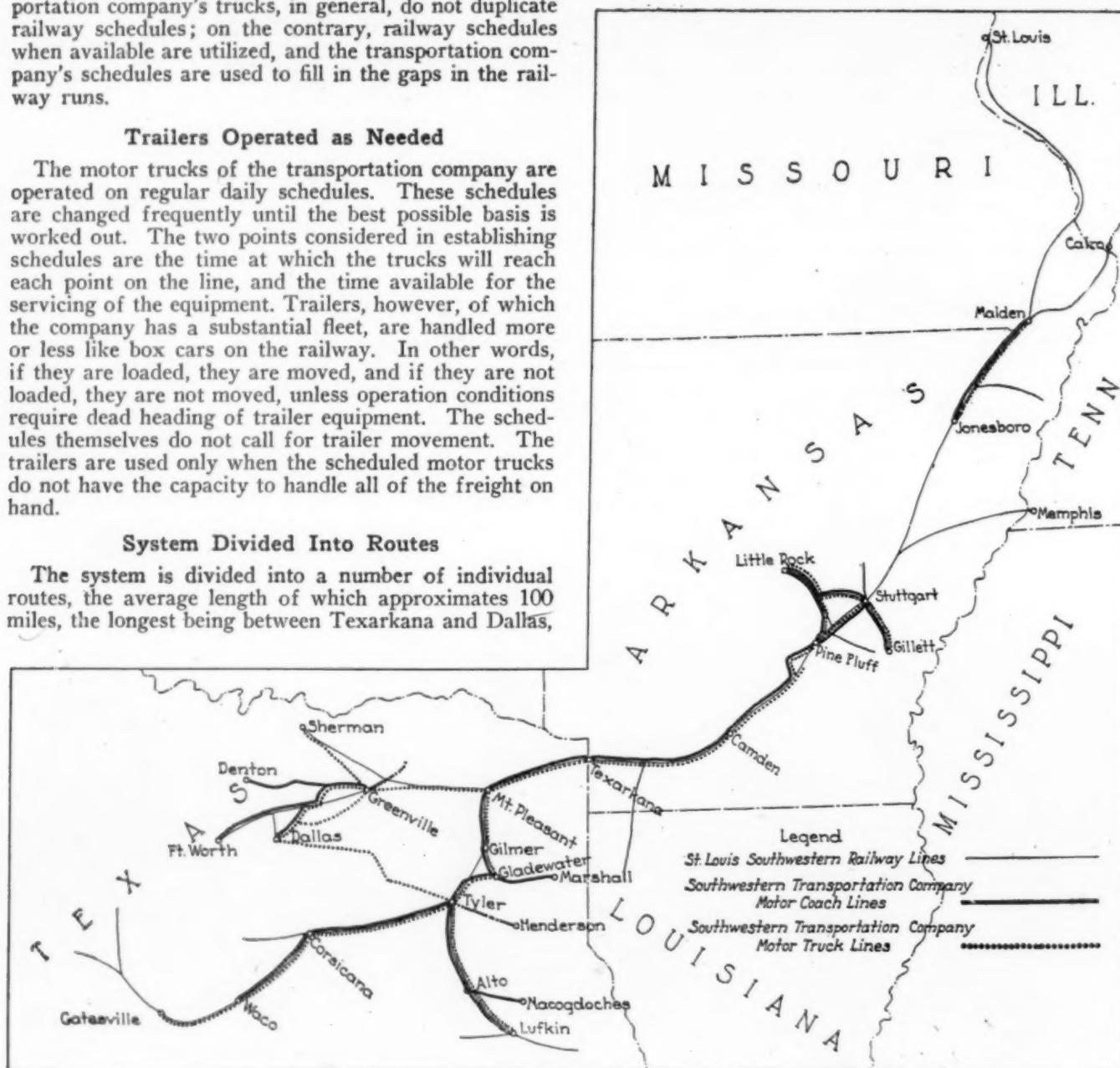
System Divided Into Routes

The system is divided into a number of individual routes, the average length of which approximates 100 miles, the longest being between Texarkana and Dallas,

a distance of 197.5 miles. Most of the runs are made in the daytime although in some instances, there are combinations of day and night schedules. Between Little Rock and Stuttgart, there is a daylight run, as there is also between Texarkana and Mt. Pleasant. Between Texarkana and Dallas, and between Tyler and Dallas, however, there are both day and night runs, one way in the daytime and the other at night.

Inter-Divisional Movements

As nearly as possible, schedules are arranged so that there will be close connections at division points, allowing for an inter-divisional movement of freight without much loss of time. In accordance with this plan, trailers are not held strictly to the division to which they are regularly assigned, and if one is fully loaded with shipments consigned to a point off its own division, it is handled straight through to the destination point of its cargo. The motor trucks, however, are held invariably to their own divisions, and if loaded with freight consigned to points off their division, are unloaded at



St. Louis Southwestern Railway, Motor Coach and Motor Truck Lines



Tractor and 7-Ton Semi-Trailer Operated Between Texarkana and Magnolia

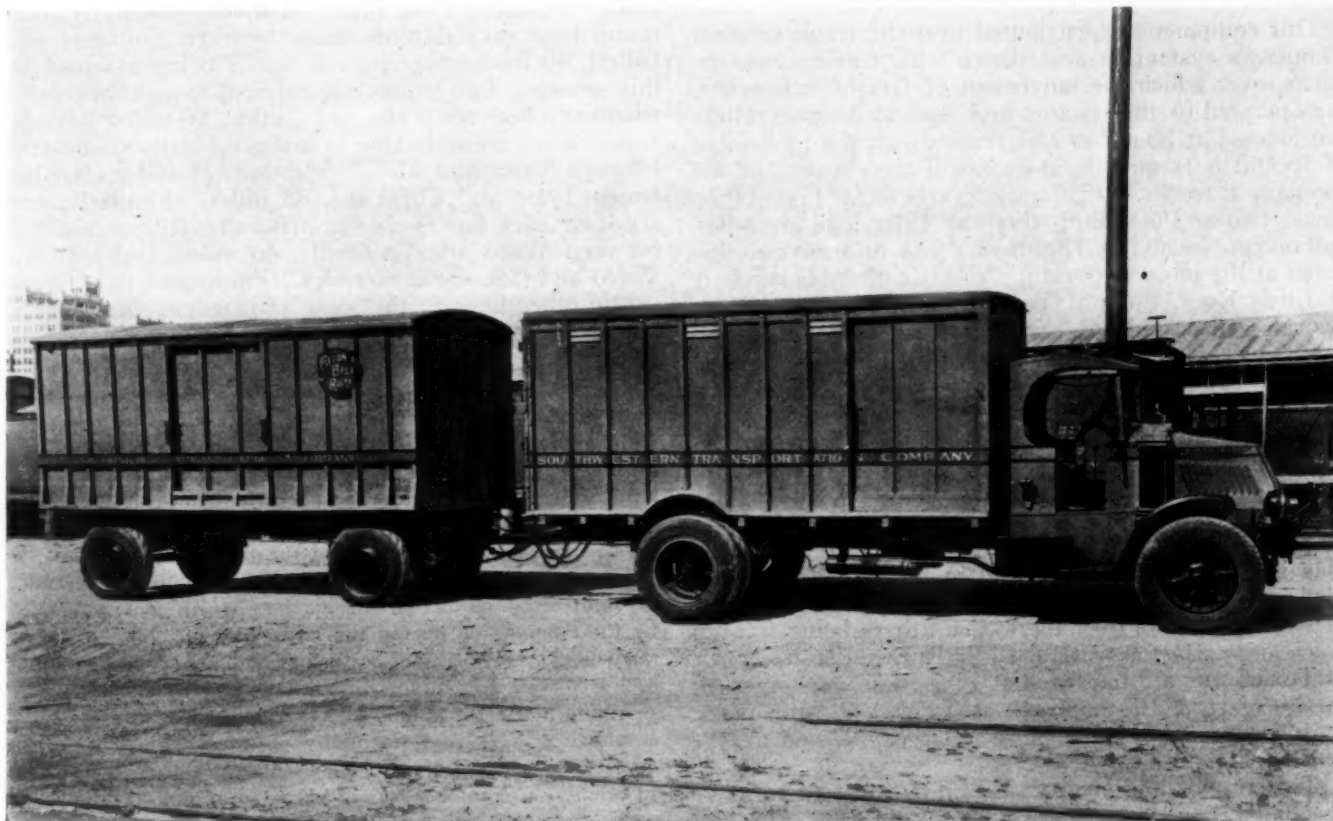
division points the freight being reloaded into other trucks. In some cases, what might be termed a "car-load" movement is provided, a trailer being spotted and loaded at a shipper's door and handled straight through without break-up to the consignee's door.

The transportation company has rented its own freight stations at some of the principal points on its line, while at others it utilizes the Cotton Belt rail stations. In several places, sections of the Cotton Belt

depots have been partitioned off for use by the transportation company. Shipments handled are of a wide variety, including virtually all kinds of merchandise ordinarily handled by railways.

Variety of Equipment

The transportation company operates equipment of a variety of sizes. Included in its fleet are thirteen tractors which haul semi-trailers of 7-tons and 10-tons



Equipment is Distributed in Accordance with Traffic Demands



Trailers Are Located Where Freight Exceeds Capacity of Trucks

capacity. Its fleet of larger motor trucks includes 22 $2\frac{1}{2}$ -ton trucks, 11 2-ton trucks, and seven 3-ton trucks. Its lighter equipment includes 14 $1\frac{1}{2}$ -ton trucks. The company operates 16 4 wheel trailers and 14 semi-trailers.

Distribution of Equipment

This equipment is distributed over the transportation company's system in accordance with traffic demands. Lines, over which the movement of freight is heaviest, are operated by the tractors and semi-trailers. Trailers are located at points to and from which the movement of freight is frequently in excess of the capacity of the company's trucks. Six trailers are located at Little Rock, two at Pine Bluff, three at Tyler, one at Dallas and one at Greenville. The smaller pick-up trucks are located at the more important terminals, there being four at Little Rock, three at Texarkana, two at Pine Bluff, two at Dallas, and one each at Mount Pleasant, Stuttgart, Tyler, Greenville and Jonesboro.

Extra Equipment

The company has eight motor trucks which are not assigned to regular schedules, but are used as extra equipment to replace trucks usually operating on regular schedules when the latter are being overhauled, or to make an "extra" run when the volume of freight available is too great to be carried in the regularly-scheduled trucks or trailers. The extra equipment is located at strategic points over the system, there being a 2-ton truck and a $2\frac{1}{2}$ -ton truck at Little Rock, a $2\frac{1}{2}$ -ton truck at Texarkana, a 3-ton truck at Pine Bluff, a 2-ton truck at Stuttgart, a $2\frac{1}{2}$ -ton truck at Tyler, a $2\frac{1}{2}$ -ton truck at Jonesboro, a $2\frac{1}{2}$ -ton truck at Greenville and a $2\frac{1}{2}$ -ton truck at Dallas.

Two tractor and semi-trailer units are used to make the daily round trip between Texarkana and Camden, 94 miles, and one truck is used to make the round trip

each day between Texarkana and Mount Pleasant, 65 miles. Two round trips daily are made between Camden and Pine Bluff, 80 miles, two trucks being assigned to this service. Two trucks provide two daily round trips between Little Rock and Stuttgart, 55 miles, and two other trucks provide two daily round trips between Little Rock and Pine Bluff, 55 miles. Similarly, two round trips each day are made between Stuttgart and Gillett, 40 miles, two $2\frac{1}{2}$ -ton trucks being assigned to this service. Two trucks are required to make the daily round trip between Tyler and Lufkin, 90 miles, but one truck on each line is able to make the daily round trip between Tyler and Mount Pleasant, 75 miles, and between Tyler and Corsicana, 83 miles. Similarly, one truck on each line is able to make the daily round trip between Waco and Gatesville, 46 miles, and between Waco and Corsicana, 66 miles. Equipment is assigned to the other lines in the same proportion, most of the trucks being able to cover well over 100 miles each day.

THE PUBLIC UTILITIES COMMISSION OF COLORADO in a recent order stated that no motor coach more than 10 years old will be permitted to operate in sight-seeing service in that State. At the same time the commission directed that operators of sightseeing motor coaches shall not pay any commission or other compensation for the procuring of passengers in excess of 20 per cent of the fare charged.

The order is a result of an investigation in the practice of sightseeing motor vehicle carriers which was conducted by the commission during the latter part of 1929. The rule regarding the age of motor coaches to be permitted in sightseeing service becomes effective January 1, 1931.

In the matter of commissions paid to secure business the commission says that testimony revealed that in some instances as much as 45 per cent of the rate charged was paid to agents as commissions. "An expense of this kind," the order states "should remain within reasonable bounds, especially since any large expense is reflected in the rate."

Four Railroads Interested in Greyhound Lines

Pennsylvania, Southern Pacific, Great Northern and Burlington hold various quantities of leading motor carriers' stocks

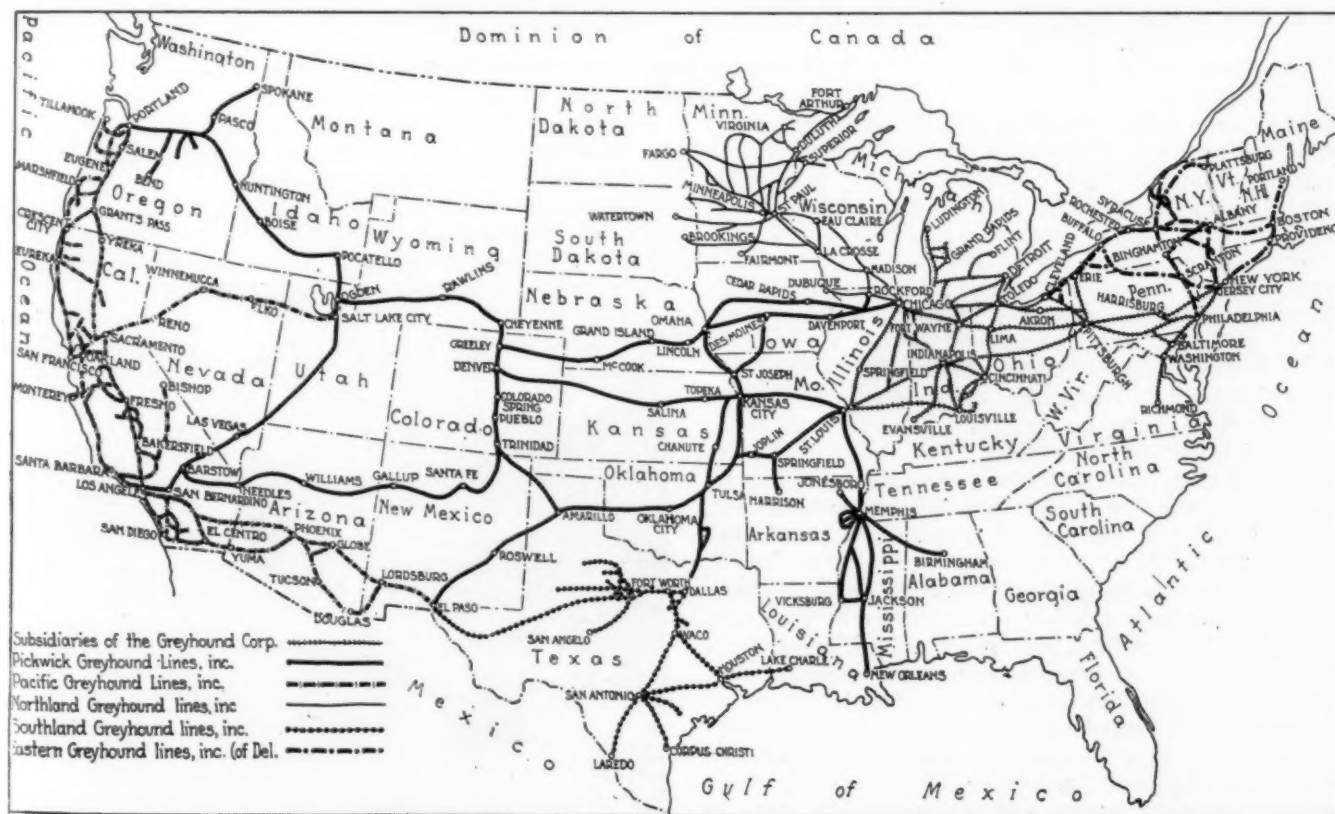
THE ownership of the Greyhound Corporation and its affiliated companies, which comprise the foremost motor coach operating system in the United States, is spread among a number of other transportation and banking corporations, including several leading railways. Within recent years, by various consolidations of large independent companies, the Greyhound Corporation has set up a system of motor coach lines extending from coast to coast and from Canada on the north to Mexico on the south. Six major operating companies are affiliated with the Greyhound Corporation, as follows: Direct subsidiaries of the corporation, which operate under the name of Greyhound Lines; the Pickwick-Greyhound Lines; the Pacific Greyhound Lines; the Northland Greyhound Lines; the Southland Greyhound Lines, and the Eastern Greyhound Lines.

Railroads Hold Stock

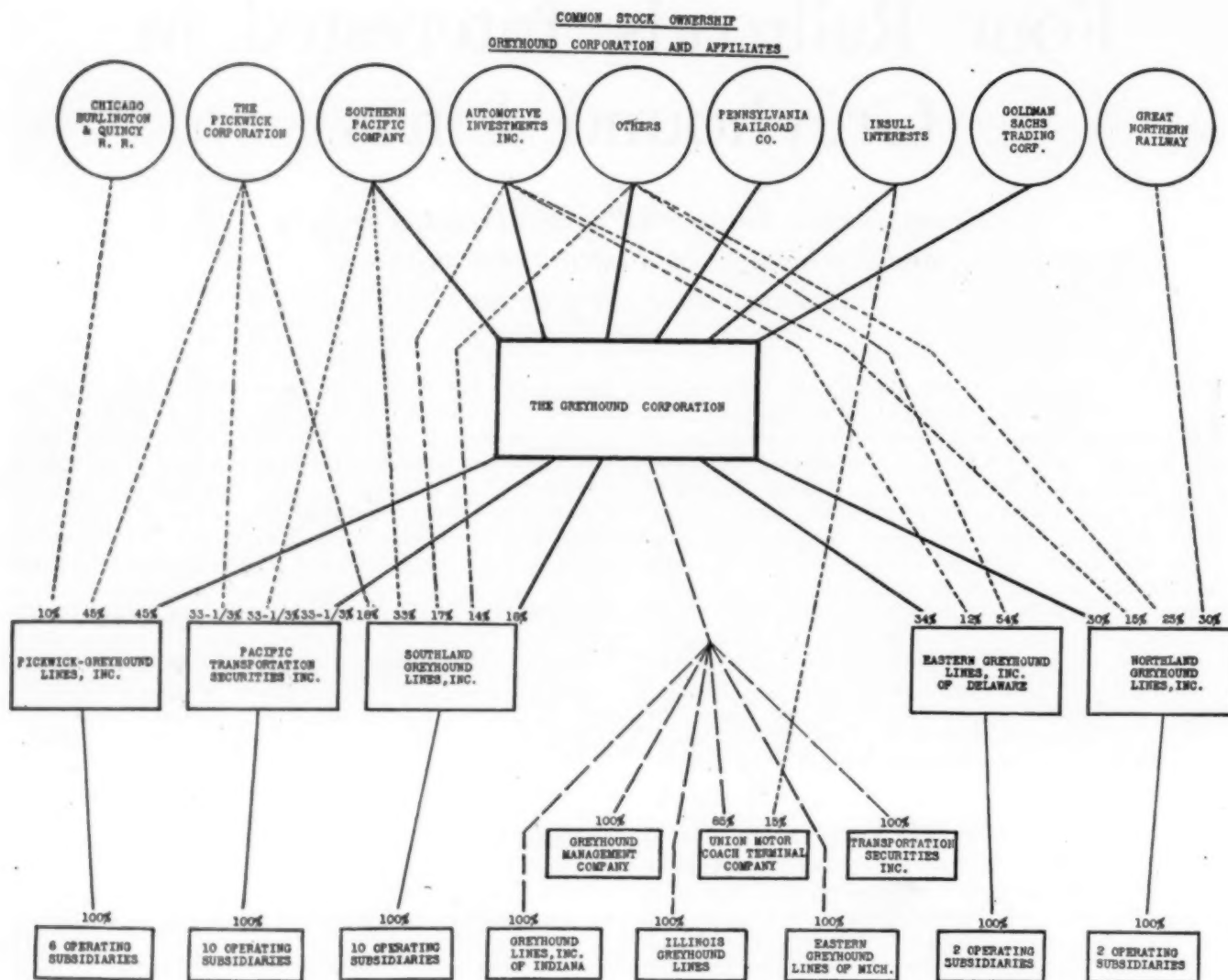
The railroad interest in the Greyhound Corporation and its affiliated companies is substantial. Blocks of the common stock of the Greyhound Corporation are

held by the Southern Pacific and the Pennsylvania. In addition, the Southern Pacific has a one-third interest in Pacific Transportation Securities, Inc., which operates under the name of Pacific Greyhound Lines, and a one-third stock interest in the Southland Greyhound Lines. The Great Northern owns three-tenths of the stock of the Northland Greyhound Lines, Inc., while the Chicago, Burlington & Quincy owns one-tenth of the stock of the Pickwick-Greyhound Lines, Inc. In addition to the railroads named on the accompanying chart, the Richmond, Fredericksburg & Potomac participates in the ownership of the Richmond-Greyhound Lines, operating between Richmond, Va., and Washington, D. C.

The Greyhound Corporation, which is the central holding company in this group, is controlled by the following companies, in addition to the Pennsylvania and the Southern Pacific: Automotive Investments, Inc., Goldman Sachs Trading Corporation and the Insull interests. Smaller portions of the stock are also held by others. The Greyhound Corporation owns 100 per cent of the stock of the Greyhound Lines, Inc., of Indiana,



The Greyhound and Affiliated Lines Cover the Country



How the Stock in Greyhound and Its Affiliated Companies Is Held

100 per cent of the stock of the Illinois Greyhound Lines, 100 per cent of the stock of the Eastern Greyhound Lines of Michigan, 100 per cent of the stock of the Greyhound Management Company, and 100 per cent of the stock of Transportation Securities, Inc. In addition, it owns 85 per cent of the stock of the Union Motor Coach Terminal Company of Chicago, the Insull interests holding the remaining 15 per cent.

How Stock of Operating Companies is Divided

The Greyhound Corporation holds 34 per cent of the stock of the Eastern Greyhound Lines, Inc., of Delaware, which has two operating subsidiaries. The remainder of the stock is held by Automotive Investments, Inc., (12 per cent), and others, 54 per cent. In the Northland Greyhound Lines, the Greyhound Corporation holds a 30 per cent interest, similar in amount to that held by the Great Northern. Fifteen per cent of the stock is held by Automotive Investments, Inc., and 25 per cent by others. The Northland Greyhound Lines controls two operating subsidiaries.

The Southland Greyhound Lines, with 10 operating subsidiaries, is owned as follows: Greyhound Corporation, 18 per cent, Automotive Investments, Inc., 17 per cent, Pickwick Corporation, 18 per cent, and the Southern Pacific Company 33 per cent. The stock in Pacific Transportation Securities, Inc., with 10 operating subsidiaries, is divided equally among the Greyhound

Corporation, the Pickwick Corporation and the Southern Pacific Company, each holding 33-1/3 per cent.

The Greyhound Corporation holds 45 per cent of the stock of the Pickwick-Greyhound Lines, with six operating subsidiaries, another 45 per cent being held by the Pickwick Corporation, and the remaining 10 per cent by the Chicago, Burlington & Quincy.



Greyhound Motor Lines Coach at the P. R. R. Shamokin, Pa., Station

Designing for

Convenience and Efficiency

in the Motor Coach Garage

By Albert Kahn

Albert Kahn, Inc., Detroit, Mich.

THE garaging and servicing of motor coaches presents a problem the solution of which requires that the number and type of vehicles to be housed, and the servicing they are to receive, be given prime consideration. Motor coaches vary in length from 27 ft. to 32 ft., and in width from 7 ft. to 8 ft. Their heights vary from 7½ ft. to 9 ft. It follows, therefore, that buildings housing such vehicles must have clear open spaces as free as possible from columns. Multiple stories are used in a number of cases; however, on the whole, the single-story structure seems preferable. One-story buildings should have a clear width of not less than 100 ft.; a width of 110 ft. is better. If multiple stories are used, and such are often required where land values are high, the 100-ft. unit is better divided, with a center space not less than 50 ft. between column centers and 25 ft. left between columns and side walls. In the opposite direction, columns should be not less than 32 ft. between centers.

The multiple story structure necessarily presents the difficult problem of access to the upper floors. While ramps in most of the ordinary garages prove an economical solution, they are virtually impossible in the motor coach garage, though the staggered-floor scheme should lend itself satisfactorily. The wide turning radius of motor coaches presents particular difficulty. The use of elevators is not favored except for reaching storage and possibly shop floors, yet it seems not impossible to use a scheme of elevators, similar in plan to the Kent system, where motor coach garages must be located on restricted ground-areas and extreme height is resorted to; but this necessitates costly equipment. The simplest solution undoubtedly is the one-story building, and this has been used in the main for the newer eastern garages.

A building almost free of columns on the first floor, but still having a second and even a third floor, is not at all impossible. Trusses spanning the entire width of 100 ft. and carrying other floors would be out of the question because of their excessive cost, but a thoroughly practical scheme might be the carrying of the trusses either above the second-floor ceiling, supporting therefrom the floor slab of the second story, or actually placing the trusses within the height of the second story.

Thus located, the trusses might have center openings designed so as to afford access to the areas between the trusses. Such a design would have the advantage of clear floor space below, where the motor coaches are stored, and still furnish on the second and third floors storage and service spaces in which columns are less objectionable. If, with such a design, the abutting streets were inclined and afforded direct access to the first and second floors, the problem of serving the upper floors would be simplified. Otherwise, either elevators or ramps could, of course, be used.

As to comparative costs, a fire-resisting multiple-story structure built of either concrete or steel, having columns in the first floor, would cost less per square foot than a one-story building, if of fire-resisting construction. If fire-proofing of the structural steel

How efficient and convenient a motor coach garage will be depends upon its design. How many stories high, what materials, what kind of flooring and windows, what ventilating and heating facilities, what lighting arrangements, what servicing provisions—all these are points to be studied before, not after, construction. They are discussed in this paper, which was read at the Transportation Meeting of the Society of Automotive Engineers.

were not required by the city building departments, or if a wooden roof were permitted, the one-story building would cost less per square foot than the multiple-story building.

In selecting a site, the possibility of future expansion always should be kept in mind. A railroad siding, where possible, is a valuable asset, since the buying of oil and gasoline at wholesale and having it delivered directly from the cars result in a substantial saving. Congested districts should be avoided. The need for accessibility is determined by whether or not the public is to make use of the building.

Inside Lots Practical

Since, in one-story structures, ample daylight can be introduced through monitors or skylights, side light is unnecessary; therefore inside lots, which are cheaper than corner lots, are satisfactory for these. The all-important considerations are adequate width and length. In many cities, especially in certain areas thereof, the allowable areas of buildings without fire walls are limited, particularly if the buildings are unsprinkled or non-fire-resisting. In some cities the area is limited in fire-resistive buildings even when equipped with a sprinkler system.

In planning a modern motor coach garage, attention to a number of details will make for ease of operation and for economy in both housing and servicing motor

coaches. It seems that in buildings of this kind, where the garage portion is one-story high, a part might easily be constructed several stories high, especially that part devoted to office work, which requires considerable floor space.

These buildings are less costly when built with wooden roofs rather than with roofs of non-combustible materials, but it seems that the latter type, all things considered, would be the advisable one to employ. Precast cement-tile roofs supported on steel purlins have proved very satisfactory. When the roofs have sufficient pitch, the so-called interlocking tile, which needs no further waterproofing, can be used. For flat roofs, precast flat-slab tile and also channel tile are available, over which is laid the regular asphalt or tar-and-gravel roof. A new form of roofing developed in recent years is one of steel boards stiffened with turned-down edges, which makes a roof considerably lighter than tile and equally satisfactory, also reducing heat loss when covered with an insulating material such as Celotex before laying the roofing felt. Interior conductors always should be used for the roofs, thus preventing frosted gutters, dangerous icicles and leaky roofs.

Cost of Garage Construction

Where intermediate columns are used, reinforced concrete will prove cheaper than fireproofed structural steel; but exposed structural steel with a non-combustible roof will be less expensive than all reinforced concrete. The cost of one-story buildings having no posts and depending somewhat upon the area, when of fire-resisting construction, but with the steel trusses unprotected, is from \$3 to \$4 per sq. ft. of area. If a wooden roof is used, the cost will be 50 cents per sq. ft. less. Multiple-story buildings of reinforced concrete will cost approximately \$3 per sq. ft., and somewhat less if made of unprotected steel and having concrete floor-slabs. Naturally, many factors bear upon the cost, such as required foundations, building laws and the like. These prices are the average under normal conditions.

Structural steel is the best material to use for 100-ft. spans, at least in this country where the cost of form work for reinforced concrete is so great; but abroad many wide-span structures are built in reinforced concrete. Either brick or concrete is satisfactory for walls. For waiting rooms, office and staff rooms, the walls would best be plastered, though the use of salt-glazed brick produces excellent results economically. Cement is generally used for floors. Cement floors are less likely to crack when slightly reinforced with steel mesh than when reinforcement is omitted. Various hardeners used in the composition assist in making the floor surface tougher and less dusty. The best floor finish, however, which has come to my attention is a method only recently introduced, in which granite chips are used for the aggregate, the floor being floated true and smooth to established grades, and then ground with a floor grinder. This process leaves the floor clean and absolutely dustless, although it costs 7 or 8 cents per sq. ft. additional. The cutting of floor slabs into squares, as for sidewalks, is not desirable, since the floors begin to give way at these joints and are then quickly ruined.

A clear ceiling height of 11 ft. is adequate for ordinary motor coaches. The roof design is important, especially where motor coach garages are on inside lots and top light must be provided. The ordinary skylight is likely to leak and generally gives trouble after a time. A system of vertical or slightly inclined lighting is therefore to be preferred, and an ample number of pivoted or top-hung ventilators must be provided. Steel sash

are greatly to be preferred to wood. A number of satisfactory makes of such sash are now to be had at a cost little, if any, higher than wooden sash. All manufacturers furnish mechanical operators, either hand or motor driven, for opening and closing these sash.

Side lighting is desirable, where possible, although even then top lighting is very essential in the necessarily wide center floor-spaces. For side lighting as well as top lighting, the steel sash are much to be preferred to the wood sash. Window sash in side walls would best be 4 ft. or more above the floor level and should be carried up between the trusses as high as possible.

Eliminating Dangerous Gases

The elimination of exhaust gas in a motor coach garage or repair shop in cold weather has been a real problem. The periodic opening of doors and windows to remove the gases is only a temporary expedient and is very expensive because of heat loss. Exhaustive experimentation with ozone has been carried on, but this method has been dropped because it was found very difficult to control the quantity of ozone required and to distribute it properly. Ozone does not, of itself, neutralize the carbon-monoxide gas, but its effects upon the occupants of the buildings are believed to neutralize the detrimental effects of carbon-monoxide gas.

The blue smoke emitted from exhaust pipes is not at all injurious, although sometimes it is nauseating; usually it rises and can easily be exhausted through roof ventilators or high transom windows. The deadly carbon-monoxide gas, which is invisible and odorless, settles to the floor and has been coped with most successfully by installing underground ducts to carry off gradually the lower stratum of air. For general clearing of this gas, 12-in. grill floor openings have been found to be sufficient, but all underground piping must be of ample size to carry a sufficient quantity of air at low velocity. This is very important because it has been found that, when high velocities are used in exhaust systems, the ventilation is very spotty, a large amount of air being drawn only from the immediate vicinity of the opening, usually taking with it a considerable quantity from the higher strata of air and causing a resultant heat-loss. The lower velocities in the larger openings give a slow but steady flow of air to the ducts. A system laid out to give three air changes per hour has been found adequate in actual practice.

In shop areas where engines are being tuned up or run more than 10 min. at a time, we attach special fittings, located flush with the floor, to the underground duct. A flexible tube is then slipped over the end of the exhaust pipe of the motor coach and the other end of the tube attached to the fixture in the floor, so that the exhaust gas is carried outside of the building. Particular care must be exercised to exhaust fumes from repair pits, as dangerous gases accumulate in these low areas.

Heating Facilities

Either steam or hot water may be used for heating the garage building. The heating plant must be accessible only from the outside of the building. A temperature of 60 deg. Fahr. is adequate for the garage portions, and the heat may be supplied by unit heaters, radiators, or pipe coils at the walls near the monitors or skylights. For the office portion, direct radiation to provide 70 deg. of heat in zero weather must be supplied.

Unit heaters are the most economical method of heating buildings of this type, and they have the further advantage of keeping the floor area entirely clear.

They also lend themselves readily to changes in the use of the area, and permit making outside air connections which aid in ventilating those portions of the building in which gases might accumulate to an objectionable amount. An important consideration is that the intake of unit heaters in all cases be high enough above the floor to prevent drawing in the exhaust gases from near the floor and redistributing them through the entire room.

The installing of special unit heaters about 15 ft. back from the doors, to direct a blast of warm air against the opening, has been found advisable in garages in which the doors are opened frequently on account of arriving and departing motor coaches. This warm air mixes with the cold air blown into the garage and makes unnecessary the objectionable periodic cooling. Mercoid thermostatic controls can be provided for the unit heaters at a slight additional cost. These will shut off the heaters at any predetermined temperature and result in a saving of steam. The installing of a separate main for heating the offices is desirable from the viewpoint of economy, since heat will be required in this part of the building at times when it is not necessary in the garage itself. During these periods the steam mains supplying the garage can be shut off.

Lights and Wash Racks

Only the simplest form of lighting is required for the storage area of the garage, but particular attention should be paid to the method of lighting and switching off the lights in the driving aisles. Lights in the storage area can be controlled from a conveniently located switch-panel board. The lighting in the shop area must be carefully planned so that working lights are located directly over the benches and the engines. Convenient outlets suspended from the ceiling should be provided between each two repair stalls to reduce to the minimum the spreading of wires on the floor.

The lighting of wash racks has been a subject of much study. A simple, satisfactory method is to provide two longitudinal bars, one on each side of the vehicle to be washed, equipped with angle reflectors at about 4-ft. intervals. These bars are suspended from the ceiling about 8 ft. above the floor. In some instances flush-type recessed reflectors, at a low elevation to illuminate the underside of the running gear, can be used.

Wash racks have been modernized through the use of high-pressure washing machines which boost the available city water pressure up to 200 to 300 lb. per sq. in. This equipment materially speeds up the washing of the chassis. The high-pressure nozzles can be used also for cleaning the engine and any greasy parts, as units are being dismantled in the shops. The use of compressed air for drying around the engine is necessary after the engine has been cleaned with a high-pressure water gun. Compressed air can also be used satisfactorily for blowing excess water off the vehicle windshields and for drying the entire body.

The Repair Shop

Necessary provision should be made to carry a trolley beam along the shop area about 10 ft. from the inside wall for use in hoisting engines and lifting the front end of motor coaches when working underneath the engines or around the front axle and steering connections. It is important that care be taken in the design of the building to provide for this, because the load imposed upon the trusses carrying the trolley beam is very heavy and special structural strength is usually necessary.

Congestion along the front of the repair shop where benches are located has been largely remedied by reducing the amount of bench space to one-half of the aisle length accommodated; in other words, as much blank space as bench space is provided along the wall. This gives the workmen a chance to place jacks, pails, bonnets and the like against the wall and out of the aisle. Compressed air outlets are provided for each bench, and each outlet at this location is equipped with a hose long enough to reach to any part of the motor coach.

As the life of pneumatic tires, especially those on heavy motor coaches, depends on maintaining the recommended air pressures, numerous compressed air outlets should also be provided along the aisles for inflating tires. A special hose reel is desirable at each of these points to keep the hose off the floor; otherwise it would be damaged.

Gasoline should be handled by the metered pressure system. Engine, transmission and rear-axle oils can now be efficiently handled in a similar manner. Water is supplied by a long hose on a self-winding reel, with a self closing faucet at the end.

Drainage of the floor must be properly arranged. A good plan is to install a shallow gutter, 12 in. wide and about 30 ft. from the side walls, extending the entire length of the garage and shop, and to cover it with iron gratings made removable to permit cleaning. The central floor space, as well as that between gutter and side walls, should be slightly pitched to the gutters, and these should have adequate fall to the outlets. Special sumps must be supplied for the wash racks. Two sections of 24-in. crotch covered with removable grating serve adequately.

So-called white industrial enamel is the most satisfactory material for painting walls and ceilings, an item not to be overlooked and which adds greatly to the clean appearance of the garage. It is best to spray it on, where this is permitted by labor unions; otherwise it can be applied with a brush. A dado of darker color, 4 ft. high, is desirable, with a black line to finish off.

Greyhound Garage at Detroit

The best motor coach garage that has come under my observation is one recently completed in Detroit, Mich., for the Greyhound Lines. This garage is 115 ft. wide over-all, and 379 ft. deep. It houses 50 motor coaches and affords in addition adequate space for a reasonable amount of servicing. The main shop of the company is elsewhere. There are four doorways in the front, two for entrance and two for exit; and all are opened and closed by electrically-operated devices.

Immediately inside of the entrance doorways, wash racks are provided for cleaning the vehicles. These have overhead sprays for hot water and a platform for manual washing. The method of washing employs a soap solution under pressure of 300 lb. per sq. in., obtained from a motor-driven triplex pump. The entire motor coach is sprayed with this soap solution. It is then scrubbed with brushes and rinsed with spray heads located in rectangular rings above and at the sides of the vehicle. The water drains to a gutter on each side covered with a removable grating. Directly beyond the wash racks are two pits, 30 ft. long, 46 in. wide and 4 ft. 6 in. deep, for oiling and greasing the chassis and filling the tanks.

The oil-handling and storage system is located in the basement, and includes four 1000-gal. tanks, three oil-pumps, one pneumatic grease-gun, one pneumatic heavy-oil gun and filtering system. The heavy oil

and grease are delivered to the pits for chassis lubrication by compressed air. Two of the four 1000-gal. storage tanks are for storage of new engine oil and one is for the storage of filtered reclaimed oil, which is pumped from the tank through a filter and delivered to the filtered-oil tank. The new and the filtered reclaimed oil are distributed by pumps from storage tanks on the first floor. The oil is filtered through an ordinary filter. Gasoline is supplied to the pits by means of four motor-driven gasoline pumps drawing from three underground tanks.

The wash racks as well as the grease pits are enclosed on one side by a steel-and-glass partition. On the opposite side is located the general office, with toilet and vault, and close to the grease pits is space for storage of tires, so that tires can be changed while greasing is being done. Above the wash racks, a mezzanine space is provided for storage of baggage which is transferred by hand from the top of the coach.

After the motor coach is washed, greased and filled, it is taken to a pit at one side of the garage and given a brake test. The brake-test pit is one of seven pits located at one side of the garage, all opening into a connecting header-pit parallel to the wall. Work benches are located in this header-pit. Each pit is approximately 5 ft. deep, 30 ft. long and 46 in. wide. They are spaced 11 ft. between centers and illuminated on both sides with vapor-proof globes recessed into the concrete side-walls. Air is exhausted from the bottom at one end of each pit.

The coaches are carefully examined each time they enter the garage, are serviced and thereafter are stored ready for the next trip. Separate rooms are provided for the battery work and for steam cleaning. In the rear of the garage is a general stock-room, a room for engine repairs, one used as a paint shop for mere touching up, and a body shop for minor repairs.

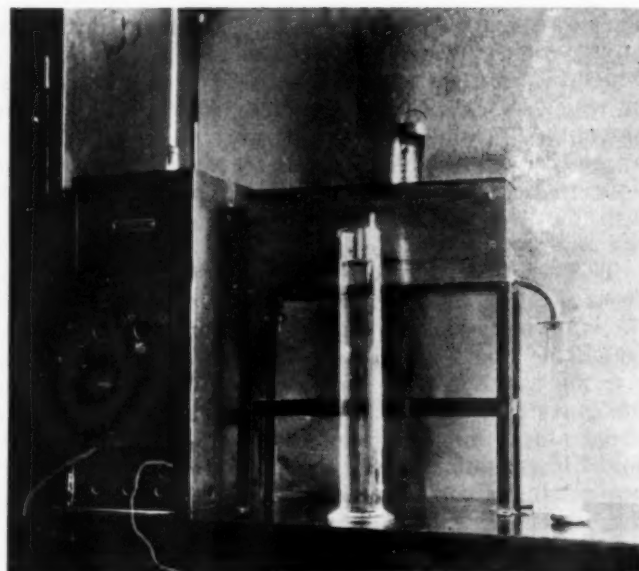
Testing Gasoline for Quality and Uniformity of Delivery

THE Railway Express Agency uses scientific methods in testing the gasoline delivered at its Forty-fourth street garage in New York. These tests are made for two purposes: First, to determine the suitability of the fuel for use in motor trucks, comparing the distillation curve with that of other fuels which have proved satisfactory, and; second, to check the daily delivery to see that it does not vary from the specification.

A low grade of gasoline will produce poor results and maintenance costs are increased if it is used for any length of time. The main disadvantage of a fuel of this type is its difficulty in starting without the use of an auxiliary heating device. Excessive choking rapidly dilutes the crankcase oil to the point where its value as a lubricant is practically nothing and expensive repairs are bound to result. A fuel containing a high percentage of heavy ends or residue also increases crankcase dilution.

A sample of gasoline is obtained every 7 to 10 days from the refiner's truck as it unloads into the garage storage tanks. A standard A.S.T.M. distillation apparatus is used, shown in the illustration.

It consists, essentially, of a standard 100 c.c. Engler flask, supported over an electric heating coil, and a condenser. A thermometer is inserted in the top of the

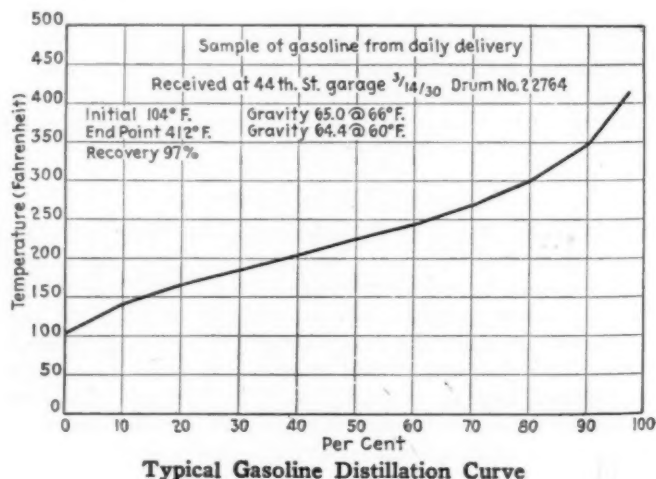


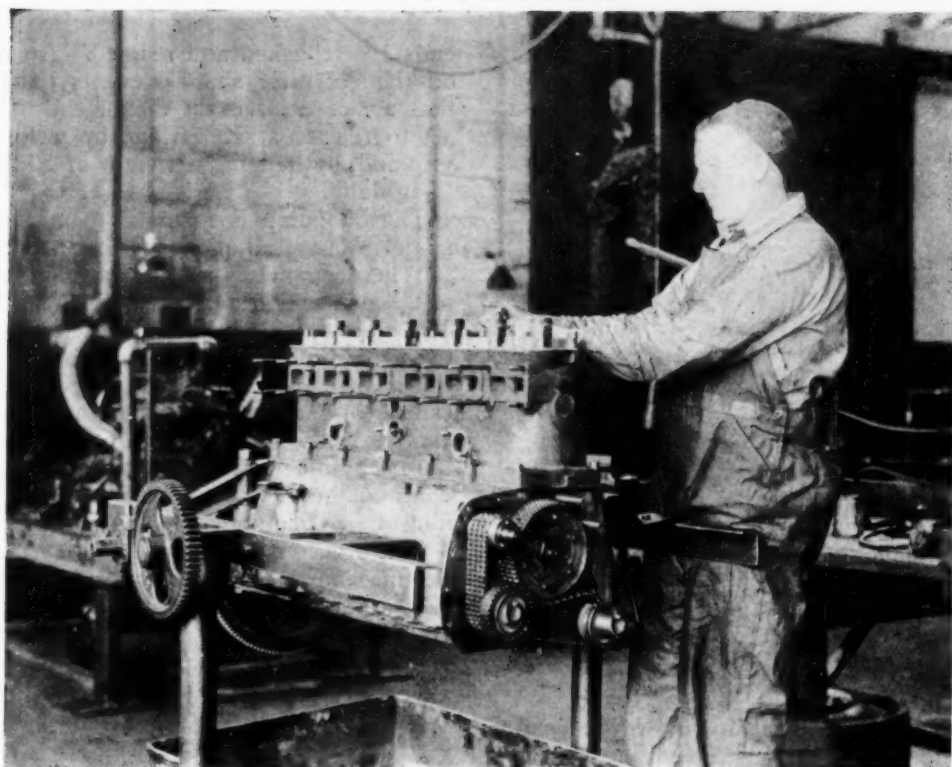
Tagliabue A. S. T. M. Distillation Apparatus
Used in Making Gasoline Tests

flask with the bulb extending down to the opening of the vapor tube to give readings of the vapor temperature. The condenser is composed of a 9/16 in. brass tube extending through a copper box which is filled with a cooling bath of cracked ice and enough water to cover the tube. The lower end of the brass cooling pipe is bent down so that the condensate can be collected into a 100 c.c. graduate. The top of the graduate is covered with a piece of blotting paper to prevent the loss of any vapor which may not have been condensed.

The heat applied to the charged flask is so regulated that the first drop of condensate falls not less than 5 min. nor more than 10 min. after the test has started.

The gravity test, is made by using a hydrometer with a thermometer in the bulb and a correction scale for variations from 60 deg. F. The distillation test is made on 100 c.c. of gasoline. Readings are taken of the temperature of the vapor at the initial boiling point and at each 10 per cent of condensate recovered up to the end point. When the 95 deg. point is reached the thermometer is carefully watched for the maximum temperature, which will be reached when all of the volatile fuel has been evaporated. The amount of recovery is important as it represents the percentage of fuel which is available for power purposes. The data are placed on a standard curve sheet for clearness, a typical case being illustrated.





Assembly Methods

Engines Run

100,000 Miles Between Overhauls

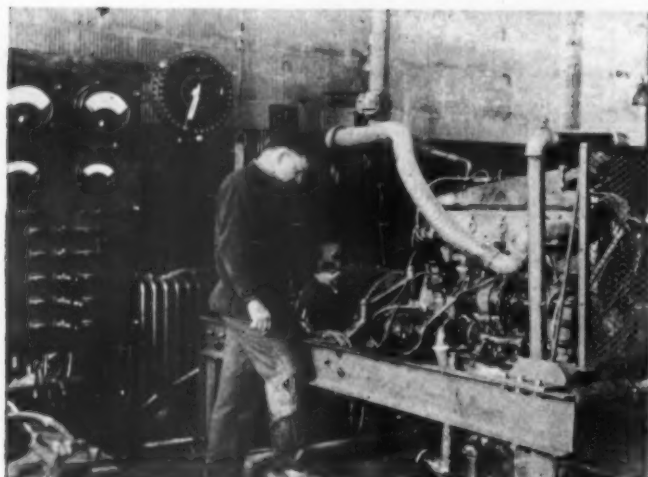
*Production methods applied to rebuilding eliminates
early obsolescence and enables old equipment
to meet present service demands*

THE People's Rapid Transit Company now operates 80 gas-electric motor coaches between New York, Philadelphia, Baltimore and Washington and between Philadelphia and Atlantic City. The Pennsylvania Railroad and the Philadelphia Rapid Transit Company own the outstanding stock of the company, and it is operated by the Mitten Management, operator of all forms of local transportation in Philadelphia. Overhauling of the motor equipment is done in the motor coach repair shop of the Philadelphia Rapid Transit Company, located at Third street and Hunting Park Avenue, Philadelphia, which also does the repair work for the 450 coaches and 1,500 taxicabs operated within the city.

The maintenance policy is intended to keep the equipment up to a standard which will not only satisfy the demands of reliable operation but will also reduce the expense of early obsolescence, and encourage the habit of riding. The engines of all motor coaches are serviced on the basis of 50,000 and 100,000 kw. hr., the kw. hr. rating being used rather than straight mileage due to the incorporation of the electric-type of power transmission. On long-distance runs over comparatively level country, the relation between kilowatt hours

and miles is approximately 1 to 1, while for city operation, with frequent stops, the relation is about 1.1 kw. hr. per mile. At the 50,000 kw. hr. point, the engine is inspected by the operating garage force, the pistons and junk heads are removed, the carbon is cleaned out and all bearings are carefully examined. If major repairs are found necessary, the engine is removed from the frame and sent to the repair shop.

When an engine has accumulated 100,000 kw. hr., it is removed from the chassis and is sent to the repair shop for general overhaul. The power generator is not removed from the chassis with the engine, but is overhauled on a separate output basis. When received at the shop, the engine is steam cleaned and completely dis-assembled. The accessories, such as the carburetor, starting motor, generator, distributor, oil pump and water pump are plainly marked and are sent to separate departments for overhaul and test. The engine parts are thoroughly steam cleaned again, and each part is examined for evidence of wear, and the timing-chain case and the crankcase, are carefully checked for cracks. If either the main bearing or connecting rod bearing journals of the crankshaft are scored or out-of-round, they are reground in a Norton crankshaft grinder which



Engine on Test Stand

is a part of the machine shop equipment. If one main bearing journal needs to be reground, all are refinished to the S.A.E. standards of 0.010, 0.020 or 0.030 in. undersize. Connecting rod bearing journals are reground in the same manner. In order to know the bearing sizes, after the engine has been assembled, the crankcase is stamped in a designated place. A mark M-.010 and R-.020 would mean that all main bearing journals were 0.010 in. and all connecting rod journals were 0.020 in. undersize. In the event that emergency repairs were required, the garage would install the bearing size, as stamped on the engine.

New steel-backed main bearings are installed and properly fitted to the crankshaft by a standard boring bar. They are given a radial clearance of 0.0025 in. and a side clearance on the center throw of 0.005 in. The connecting rods are rebabbitted and are fitted to the crankshaft with a radial clearance of 0.0025 in. and a side clearance of 0.004 in., using a Wadell boring machine. The wrist pins and bushings and the piston and junk rings are renewed, but the pistons are not necessarily renewed unless considerable wear has taken place or a new design is being used. To reduce vibration in the engine, both ends of the connecting rods, including the piston and wrist pin, are weighed and are held to very close limits of variation.

The engines are all of the sleeve valve type and renewing the sleeves gives a new cylinder bearing surface; consequently, standard size pistons and rings are always used when replacements are required. New sleeves are usually required at the complete overhaul period, and they are fitted with a clearance of 0.0045 in. between the sleeve and the cylinder block and between the sleeves. To eliminate the human variation in determining this small clearance between relatively heavy parts, a standard test has been devised. Two blocks of steel have been made, which are large enough to rest on the ends of the sleeves, weighing 8 lbs. and 14 lbs. respectively. The sleeve is inserted into the cylinder block or into the outer sleeve, depending on which is being fitted, with a 0.0045 in. feeler extending throughout the bearing length. The fit should be such that the sleeve will support the 8 lb. weight without slipping, but the 14 lb. weight should cause the sleeve to slip. If the sleeve does not support the 8 lb. weight it is too loose and if it supports the 14 lb. weight it is too tight.

The eccentric rod bearings seldom need replacement. The eccentric rods are adjusted by removing shims and, if they are scored, by reaming and scraping. The upper

ends are rebushed and reamed. An over-riding clutch on the eccentric shaft prevents damage in the event that a sleeve seizes in the block. This is tested and set to release at 152 ft. lb. by locking the shaft in a vise and, by hanging a weight of 50 lb. on a lever 3 ft. $\frac{1}{2}$ in. long.

The oil pump is fastened to a bench fixture and is made to pump oil at higher than operating pressures.

When completely assembled, the engine is put on the test bench and is broken-in from no-load to full load. There are two engine stands, each of which has an electric generator of a type similar to that used in the motor coaches for the electric transmission. These generators can be discharged through a variable rheostat, or they can be connected so that one engine, under test, can lap-in the other. However this lapping-in has been discontinued as it was found to be less effective than running the engine under its own power with no load.

The procedure of breaking-in is as follows: idling under no load; 20 minutes at each speed of 800, 1000 and 1200 r.p.m.; one-half load for one hour at 1200 r.p.m.; full load for one hour at 1200 r.p.m., and for two hours at 1400 and at 1600 r.p.m. As a final test the engine is run at 1400, 1500, 1600, 1700, 1800 and 1900 r.p.m. and readings taken of the output, which must exceed 45 k.w. at one of the designated speeds. This output rating refers to engines of approximately 468 cu. in. piston displacement. During the test the oil pressure is adjusted to 50 lb. pressure and the ignition is set to give maximum speed and power and is permanently locked. No automatic compensation for speed is required as in practice it has been found that the engine does not kick back at low speeds. After passing the test satisfactorily, the engine is painted and held until called for by an operating garage.

A record is kept of each engine, indicating the number of times it has been in the shop for overhaul and what parts are renewed each time. At the overhaul period changes in design are made which have been found necessary to enable the unit to give performance equal to that of new equipment. These changes are made to increase the power, improve reliability and to decrease the gasoline and oil consumption. The engine, when it leaves the shop, has been remanufactured to new production standards, and will give service comparable to that of the latest product of the builder.



Checking Sleeve Clearance

Co-ordinated Transportation*

Public interest being served by the reduction of destructive and unnecessary competition

By George D. Ogden
Assistant Vice-President, Pennsylvania

THE term "co-ordinated transport" is one which has come to have a definite and specific, almost a technical meaning. It means utilizing the various agencies and methods of transport which we have at our command, primarily for the purpose of making them supplement and help each other, rather than compete with one another.

While the main objective is not to eliminate competition of a sound character, nevertheless, the reduction of destructive and unnecessary competition between the different transportation agencies has been one of the most important results obtained, and is generally recognized as being unqualifiedly in the public interest.

The fundamental purpose, however, is to increase the utility of the various transport media, to ascertain, as far as possible, those fields or departments of service in which each demonstrates its maximum superiority, and then to bring the whole together in such a manner as to produce a service as complete, well-rounded-out, and comprehensive as it is possible to offer to the public. It is needless to say, of course, that this must be done in such a way as to secure an adequate return upon invested capital, encourage the growth of traffic upon a remunerative basis, and protect the investments in long established transportation enterprises against encroachments of an unfair or uneconomic character.

Co-ordinated transport, as we know it today, deals with four principal agents of service; viz., the railways, the highways, the airways and the waterways. In its existing form it is a very recent development in the evolution of carrier service.

It is extremely interesting, however, to note that while the modern form of co-ordinated transport is so very new, the germ of the idea itself is really very old.

Nearly one hundred years ago the state of Pennsylvania inaugurated a remarkable transportation system between Philadelphia and Pittsburgh. It was known as the "Main Line of Public Works" and was the forerunner of the Pennsylvania Railroad. It consisted, briefly, of a rail link from Philadelphia to Columbia, Pa., a canal from Columbia to Hollidaysburg, Pa., where the foot of the eastern slope of the Allegheny Mountains was reached, another rail line consisting of alternating inclined planes and levels across the mountains to Johnstown, and another canal from Johnstown to Pittsburgh. The objective of this system, which operated for nearly twenty years, was to reach the head waters of navigation of the Ohio river at the Pittsburgh gateway. This was certainly a form of co-ordinated transport.

No one, of course, at that time spoke of it as co-ordinated transport, but I think we

can easily recognize that in principle it is the same as what is being done today when, for instance, motor trucks are employed to collect and distribute freight in terminal zones, and a railroad line is used to perform the intermediate long haul between the terminals.

In such case each agency is utilized where it functions best, according to the conditions locally prevailing, and that is exactly what was accomplished by the combined system of railroads and canals which constituted the "Main Line of Public Works."

Confining our consideration of the subject to its purely modern aspect, I think we may safely say that co-ordinated transport, as now understood, dates from a report issued November 2, 1923, by the special committee appointed by the Chamber of Commerce of the United States to consider the "Relation of Highways and Motor Transport to Other Transportation Agencies."

Principles of Co-ordination

The appointment of this committee was a suggestion of President Hoover, then Secretary of Commerce. There were thirteen members, representing motor manufacturers, motor operation, industry in general, the railroads, water transport, and the public press. The committee, as the result of an elaborate study, reached a number of important conclusions which are, unfortunately, too long for me to quote in full. The first, however, is memorable. It is to this effect:

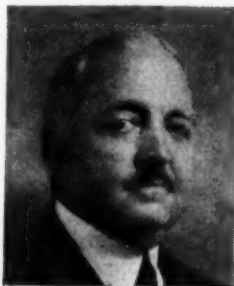
"The best interests of the public and the rail, water and motor carriers lies in co-operation between the various agencies of transportation rather than in wasteful competition."

That conclusion is the cornerstone upon which our entire system of modern co-ordinated transportation has been built up. It is still the fundamental truth in the whole matter.

Some other basic principles enunciated by the committee may be summarized as follows:

"The greatest opportunities for co-operation between motor vehicles and railroads are in the terminal areas of our great cities where railroad capacity is most limited and its expansion most difficult and costly. Such co-operation makes possible through transportation service from the door of the shipper to the door of the consignee, for those who desire and are willing to pay for such service. It also opens many possibilities for relieving the railroads of uneconomic services for which the truck is better fitted, such as trap car service and interchange between terminals in the same area.

"Outside of terminal areas the factor of distance chiefly determines the zones in which railroads and motor trucks are, re-



George D. Ogden

*An abstract from a lecture delivered February 21 at Rutgers University.

spectively, superior. It is in the public interest to recognize the limits of both types of carriers. The railroads should be permitted to discontinue unprofitable service for which motors are better adapted, and motors should discontinue their efforts to handle general traffic over excessive distances. Motors have a wide field of usefulness where no other agency is available. Passenger motor coaches offer valuable means by which the railroads can extend or supplement their service. Common carrier motor service, both passenger and freight, should be subject to public regulation."

These conclusions are all just as sound doctrine today as when they were announced by the committee over six years ago.

Rail-Motor Truck Co-Ordination

At the present time, the Pennsylvania has fifty motorized station-to-station line haul routes that have taken the place of "peddler" freight train service. These motorized freight lines represent a total length of 1,818 route miles. The number of stations thus served by trucks is 705, and 71 trucks and 29 trailers are used in the operations.

The employment of trucks in terminal work is also rapidly progressing. In the Cincinnati terminal district and between St. Louis and East St. Louis the Pennsylvania participates with all other roads entering these districts in effecting the inter-station and interline transfer of all l.c.l. freight under trucking contracts.

Similar arrangements are in operation, but confined to interchange between Pennsylvania stations only, at New York, Philadelphia, Detroit, Toledo, Baltimore, Pittsburgh and 112 other smaller points on the Pennsylvania System, all l.c.l. freight being interchanged between our stations within these terminal areas by motor trucks. In this terminal zone l.c.l. interchange service there are utilized 612 trucks, 162 tractors and 967 trailers and semi-trailers.

The use of portable containers, capable of being carried either on motor trucks or specially equipped flat cars, is the newest and in some respects the most interesting development in the co-ordination of rail and highway transportation for the more efficient and convenient handling of l.c.l. freight.

The basic theory of this service is to use the containers carried upon motor trucks for the short distance collection and delivery freight within the terminal zones, transporting the loaded containers, several at a time, upon flat cars, to perform the longer haul by rail between terminals. Thus each agency, the truck and the railroad, is enabled to function in the field for which it is particularly fitted, resulting in an almost ideal adaptation of the principle of co-ordinated transport.

The use of container cars to handle l.c.l. freight at regular class rates in station-to-station service also promises to heighten still more the efficiency of our company's operations. This improved method of operation involves a substitution of container cars for box cars in the handling of l.c.l. freight and is a project entirely distinct from the use of containers by individual shippers and forwarding companies. Service of this character is now in operation on two routes and plans are being formulated for its wide extension. While it cannot be classed as co-ordinated transport, as the containers are not trucked at either end of the haul, I have mentioned it merely to cover the general scope of container operations.

Let us now turn to the field of passenger transporta-

tion and consider what is taking place there. While the privately operated automobile has been the principal factor affecting railroad traffic, motor coaches have also had a very important development, particularly in recent years, supplying an important service auxiliary to that of the railroads. Our management has recognized that in many cases this service could, in the interest of the public, be incorporated with our own rail operations.

Pennsylvania's Motor Coach Services

We have therefore organized a subsidiary corporation, the Pennsylvania General Transit Company, all the stock of which is owned by the Pennsylvania Railroad. Using it as a medium, we have obtained, and are obtaining, certificates of public convenience to operate motor coach lines wherever such step is necessary. In addition, we have acquired, outright, approximately one dozen companies already operating chiefly over routes of local or comparatively short-distance character. We have also acquired a 75 per cent interest in the Peoples Rapid Transit Company, operating between Philadelphia and New York, Philadelphia and Atlantic City, Philadelphia, Baltimore and Washington, etc.

These lines represent a total investment of about \$2,000,000 with 139 motor coaches, carrying more than 4¼ million passengers a year.

Of larger scope, however, are the relations, both operating and financial, which we have formed with a much more extensive enterprise, the Greyhound Lines of Indiana.

The organization handles our motor coach transportation between the Mississippi river and the Atlantic seaboard—substantially the territory traversed by our rail lines. It represents an investment of \$19,000,000 in capital, does a business of over \$7,000,000 a year, operates 425 motor coaches, carries 3,000,000 passengers annually, for the most part over long-distance hauls, and rolls up 19,500,000 motor coach miles yearly.

Thus we have a motor coach organization of no mean proportions, even by comparison with the statistics of railroad financing and operation. We regard it, however, as only a beginning and we foresee a far greater future for the co-ordination between railroads and motor coach service.

Why People Ride in Motor Coaches

We have carried on careful studies to find out why it is that people ride in motor coaches. We believe we have discovered the following reasons:

1. Improved highways.
2. Economy. Motor coach fares are about 60 per cent of rail fares.
3. Motor coaches offer many of the conveniences of private motor cars.
4. The passenger usually gets a better scenic view of the country than from the train. At any rate he views it from a different and less accustomed viewpoint.
5. Flexibility of motor operations permits service of a character often impossible by rail.
6. The motor coach provides practically door-to-door and center-to-center service.
7. The psychological principle of imitation. The widespread use of private motors has created a general desire to "ride on rubber."

A method of rail and motor coach co-ordination which suggests itself is that passengers over specified routes may be offered the option of making their journeys partly by rail and partly by motor coach, using sleeping cars at night and motor coaches for part or all of the daylight hours of the trip.

In addition, we intend to utilize motor coach lines more fully than heretofore as feeders for our established rail service and to extend or improve motor coach transportation in territory not conveniently served by existing railroad facilities.

To the National Automobile Chamber of Commerce I am indebted for the following facts indicating broadly the extend to which co-ordination with motor vehicles has been effected by the railroads of the United States as a whole:

At the close of 1929, there were 66 steam railroad systems using motor coaches and 55 using trucks in service offered to the public. The total number of motor coaches so used was 1,454 and of trucks 5,861. To the latter figure should properly be added 8,941 trucks used by the Railway Express Agency, owned by the railroads jointly. This brings the total number of trucks utilized by, or in co-ordination with the railroads, in the performance of public transportation service, to 14,802, certainly a very sizable figure. The number of railroad terminals throughout the country motorized for the interchange of l.c.l. freight was 399.

Motor Coaches Attract New Traffic

Now it is a perfectly legitimate question to ask why the railroads should engage in such a policy and whether, in offering another means of transport, they are not really competing with themselves.

It is certainly obvious, of course, that when a given passenger is riding in one of our motor coaches he cannot at the same time be riding in one of our trains. But, on the other hand, he might not be riding at all if the motor coach were not available. He may be attracted by the lower price of the motor coach ticket and take a journey which otherwise he might not feel himself able to afford. With a large proportion of motor coach riders that is undoubtedly a controlling or, at any rate, a powerful consideration.

Nevertheless, we know that many patrons ride our motor coaches, more or less regularly, not primarily for motives of economy, but simply because they like it. I have already referred to the principle of imitation which often leads the habitual driver of a private automobile to consider riding in a motor coach at least part of the way when planning a journey. I have also mentioned the change of scenery from the accustomed railroad routes which the motor coach rider enjoys. These are real influences in creating a demand for motor coach service co-ordinated with the railroads.

All Grades of Service Needed

The possible buyers of passenger service in the United States represent every variety of taste and range of personal means. If the railroads are to satisfy completely the varying demands and requirements of this great market they must be prepared to offer all forms and grades of transportation service commercially possible. Hence, we find them ready to serve the public with airplanes, which are much faster than trains, and with motor coaches, which are considerably more leisurely and cheaper. In the train service itself, they must offer every grade of service from the low-rate overnight special excursion, in which passengers are willing to sleep in day coaches for the sake of the saving in cost, to the most luxurious blue-ribbon extra-fare limiteds, with compartments and drawing-rooms, baths, lounge, club, library and observation cars, restaurants on wheels, and ladies' maids, secretaries and barbers supplementing the usual train crews.

In other words, as our company's president, General

Atterbury, has said, the railroads must be ready to give the kind of service the American people want, and for that purpose must consider themselves not railroads merely, but general transportation enterprises.

Air-Rail Service

The Pennsylvania was the first railroad in America to register officially its confidence in the future of commercial flying. The pioneer 48-hour, coast-to-coast, rail-air service was established by Transcontinental Air Transport last July and has been in regular operation since that time. Perhaps the outstanding feature of this service is that it permits long distance travelers to enjoy the high speed of planes in daylight hours and the comfort and convenience of Pullman cars at night.

Without entertaining any illusions concerning the commercial limits of airplane transportation, we can say very definitely that it has a promising future and that it will be a real factor in the further progress of our civilization. We are particularly convinced that co-ordinated rail-air service is here to stay. It rests on thoroughly sound foundations and meets genuine economic and social needs of our people. We feel that these needs are certain to grow as time passes. Rail-air transport doubtless will remain the framework around which all other forms of commercial aviation will expand.

Co-ordination with Water Lines

Co-ordination between railroads and the inland waterways, centers chiefly around traffic on the Ohio and Mississippi rivers, their tributaries and the Great Lakes. Development of the river traffic has been made possible by the recent deepening and improvements of these waterways by the federal government.

The railroads have displayed a readiness to co-operate with these barge lines in the same manner as with their all-rail connections. In consequence, numerous joint through rates have been established. These rates apply not merely to and from river points, but also to and from points beyond.

Co-ordinated transport between the railroads and vessel lines on the Great Lakes is organized upon the same principles applying in the case of river barge lines.

Another most interesting example of co-ordination between rail and water transport is found in the passenger field. On January 21 the Pennsylvania operated two Pullman cars from New York to Chicago on "The Broadway Limited" and two from Pittsburgh to Chicago on "The Liberty Limited," for the purpose of affording direct through service to San Francisco for passengers desiring to connect with the steamer "Malolo," leaving there January 25 for Honolulu.

The service was well received, and was duplicated for a second trip, the cars having left New York on February 18, to provide another direct through service to San Francisco for connection with the "Malolo."

Having now sketched, necessarily in very incomplete form, the principal features of co-ordination between railroads and other agencies of transport, I wish to leave with you one concluding thought. The railroads are our basic means of inland transportation. There is every reason to believe that they will remain so indefinitely.

It is, therefore, natural and economically proper that, in effecting co-ordination, the railroads should be the foundation upon which it is built up. This tends to conserve the revenues of the country's main carriers and constitutes a further protection against wasteful competition or duplication of facilities.

New Equipment

Federal 2½-Ton Has Bevel or Worm Drive Rear Axle

THE Federal Motor Truck Company, Detroit, Mich., has brought out a new truck which features a 72-hp. overhead-valve engine, 4-wheel hydraulic internal-expanding brakes with booster attachment, four-speed transmission, and a choice of either bevel or worm-drive rear axle. The truck is known as model T-10B or T-10W depending on the type of the rear axle.

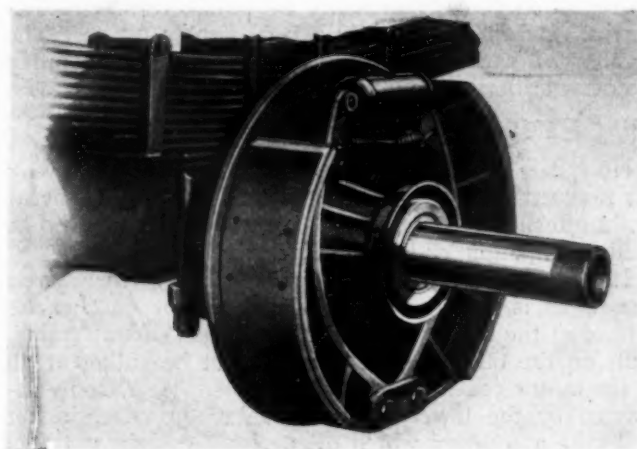
The model T-10B is equipped with a heavy-duty, full-floating, bevel-drive rear axle which has a straddle mounted pinion supported by three roller bearings, and axle shafts made of nickel-chromium steel. Two gear ratios are available, standard 5-4/7 to 1 and optional 6-5/6 to 1. The bevel drive model is suitable for high speed operation. With the standard gear ratio, 34 in. by 7 in. tires, and the engine governed at 2200 r.p.m., the road speed of the truck is 41 m.p.h. The worm drive, model T-10W is designed to fulfill the demands of dump service or other slow-speed work. The alloy steel worm is mounted on three roller bearings, one at the front and two at the rear, and the rear axle housing is made of special alloy steel of great strength. Three gear ratios are available: 7½ to 1, 8¾ to 1, and a standard of 6¾ to 1.

The six-cylinder engine has a bore of 4 in. and a stroke of 4⅞ in., giving 311 cu. in. of piston displacement. The overhead valve system is mounted integral with the head, and the entire mechanism can be removed in one operation. The crankshaft bearings, the timing chain and the overhead valve mechanism are lubricated under pressure. An air cleaner, a vacuum type governor, and an oil filter are regular equipment.

The four-speed selective type transmission is mounted amidship on frame cross-members, and the 12 in. single plate clutch is enclosed in the flywheel housing on the engine. To guard against the swaying of the vehicle at high speeds, the center of gravity is kept low by locating the frame as close to the ground as possible, consistent with good design. The channel type side rails are 7½ in. deep and 3½ in. wide. All

brackets and cross-members are hot riveted. The 54 in. by 3 in. rear springs have auxiliary helper springs which are 41 in. long and 3 in. wide. Driving thrust is taken by tubular radius rods which have ball and socket joints.

The ventilated, disc type wheels, single on the front and dual on the rear, are demountable at the hub and

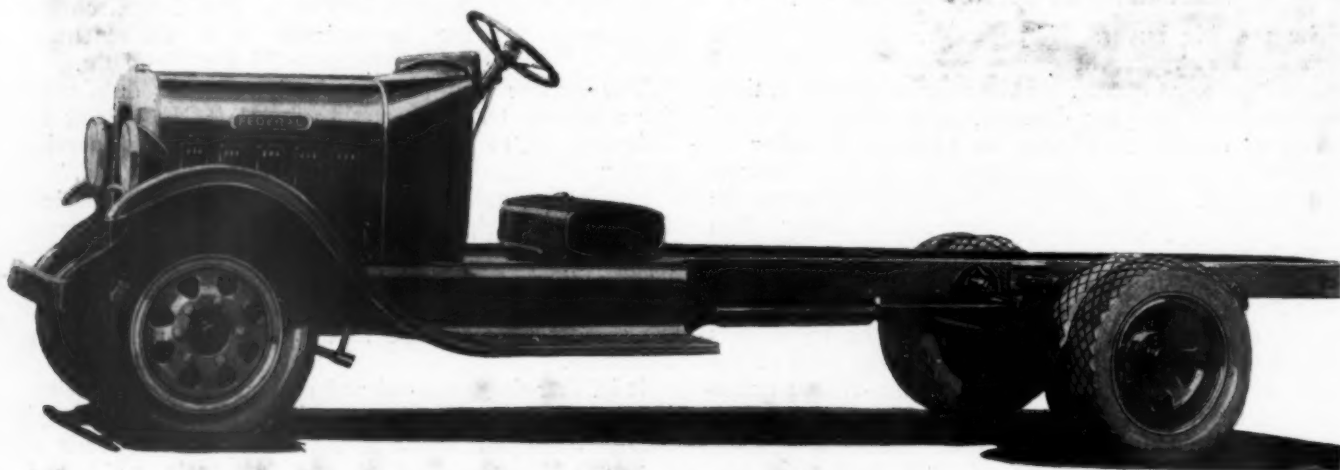


Hydraulic Brakes Used on Federal Model T-10

may be equipped with high pressure tires instead of the regular balloon tires, at an extra cost.

The Lockheed four-wheel, hydraulic, internal-expanding service brakes have a vacuum booster to amplify the braking pressure. The front wheel drums have a diameter of 16 in. and a width of 2¼ in., and the rear wheel drums are 17¼ in. in diameter and 4 in. wide.

Wheelbase lengths of 158, 165, 177 and 189 in. are available. The total allowable weight of the model T-10B is 15,000 lbs., and of the model T-10W, 16,000 lb. The chassis weight of the 177 in. wheelbase model, ready to run, is 6750 lb.



Federal 2½-3 Ton Model T-10 Truck Chassis

Increased Power in Type W Yellow Coach

SEVERAL improvements have been made to the type W, intermediate capacity, Yellow Coach, which is manufactured by the General Motors Truck Co., Pontiac, Mich. A new chassis of 215-in. wheelbase supplements the present 185-in. wheelbase, and the engine capacity of both models has been increased. The 215-in. chassis, known as the type W-215, will be equipped with a 25-passenger, high headroom, observation coach body, which, as an option, can be equipped with 21 widely spaced, reclining chairs. This model is designed especially to fill the important place, in seating capacity, between the 21-passenger and 29-passenger intercity type coaches. The 185-in. chassis



Interior of 21-Pass. Observation Parlor Coach

will have either a 16-passenger, low headroom, parlor coach body or a 21-passenger, high headroom, observation body.

The Cadillac 8-cylinder V-type engine used in the type W has been modified to meet motor coach re-

quirements, and the power output has been improved by increasing the displacement from 341 cu. in. to 353 cu. in. It is very compact, yet all units are easily accessible. The short engine length makes possible a greater useful loading space for a given overall length.

The bore of this engine is $3\frac{3}{8}$ in. and the stroke is $4\frac{15}{16}$ in. Cast nickel iron pistons are used and the connecting rods are made of special formula steel, placed side by side, two operating on each crank pin. The crankshaft has three main bearings of $2\frac{3}{8}$ -in. diameter, and the outer ends of the front and rear bearings are less than 24 in. apart. Lubricant is supplied under pressure to main bearings, connecting rods and wrist pins. The upper and lower halves of the crankcase are made of aluminum with rigid webbing. Oil and air cleaners are of the A C type. The carburetor is a multiple jet, plain tube type with adjustment for high and low speed. A single, porcelain enameled, case iron exhaust manifold on each cylinder block connects, by a Y branch, to the single exhaust pipe.

Ignition is furnished by a Delco, 12-volt, automatic advance distributor which has two breakers, one of which is adjustable for synchronizing. For accessibility, the generator is mounted on the top of the engine above the carburetor and is driven by a separate leather belt. It has automatic voltage and current regulation, and the capacity has been increased from 300 to 600 watts. The starting motor has a geared head and a Bendix drive, with positive engagement of the pinion controlled by the starter pedal.

The 21-in. diameter fan has six blades and is driven by an adjustable V-belt. The clutch is a twin-disc plate type with two cast-iron driving plates to insure rapid heat dissipation. The four-speed transmission is mounted on the engine fly wheel housing and has reductions as follows: first speed, 4.77 to 1; second speed, 2.85 to 1; third speed, 1.77 to 1; fourth speed and reverse 4.99 to 1.

The tubular propeller shafts are supported at a frame cross member by widely spaced roller bearings which are proportioned to take the additional stresses of the emergency brake. The underslung, worm and wheel,



Yellow Coach Type U or W 185-in. Wheelbase Chassis

rear axle has a cast steel housing and semi-floating axle shafts with a standard ratio of 5.4 to 1. Other ratios available are 5.00 to 1, 6.00 to 1, and 7.00 to 1.

The chassis is equipped with four-wheel, hydraulic, internal expanding service brakes employing a B.-K. booster unit. Each brake drum has four lined shoes simultaneously operated, giving even pressure all around the drums. The diameter of the drums is 16 $\frac{1}{8}$ in. and the shoes are 3 $\frac{1}{4}$ in. wide. The emergency brake is mechanically operated, contracting on twin brake drums, one on each side of the propeller shaft center bearing. The pressed steel disc wheels have 20 in. rims. The tires furnished as regular equipment on the 185-in. wheel base model are 34 in. by 7.5 in., and on the 215 in. model, 36 in. by 8.25 in.

Another new 185-in. wheelbase chassis, known as the type U, has been recently developed by Yellow Coach. This type U-185 will have the same features of design of the type W-185, except the engine, which will be a modified Buick design, of 331.4 cu. in. cylinder capacity.

Eisemann Magneto Designed for High Speed Engines

THE type GV magneto, recently introduced by the Eisemann Magneto Corp., New York, has been built to meet the added requirements brought about by the recent trend of engine design toward high compression heads and increased speed. Several new features of construction are incorporated in this magneto to give it extra capacity.

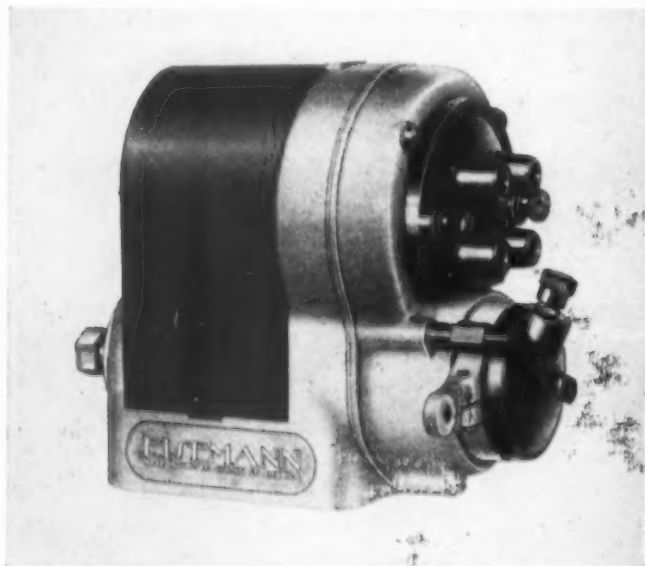
The wire used in the secondary winding of the armature is number 40, which is 31/1000 in. in diameter. The usual construction is number 38. In using the smaller diameter wire, a greater number of turns are made possible, thereby building up a higher

the low sparking speed of the magneto is said to be very important.

The long cams in the breaker-box insure smooth opening and closing of the breaker contact points and the elimination of chattering. This tends to increase the life of the platinum-iridium contact points. The long cams hold the contact points open a sufficient time, permitting the armature core to become thoroughly magnetized, as well as providing ample time for the magnetic field to collapse. The complete building up and subsequent collapse of the magnetic field greatly adds to the efficiency of the spark.

Weaver Rim Stripper

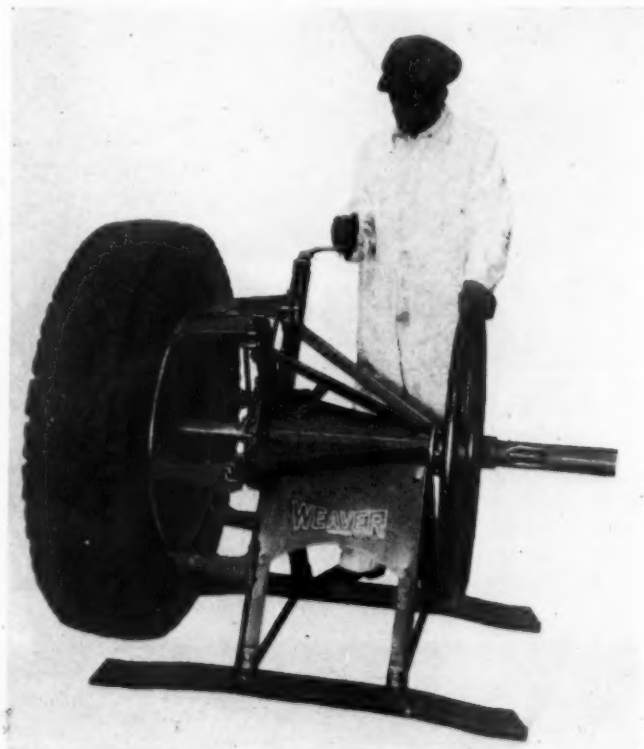
A HAND-OPERATED machine for removing truck and motor coach tires from rims has been brought out by the Weaver Manufacturing Co., Springfield, Ill. The rim stripper is designed to remove



Eisemann Type GV Magneto

potential at the spark plug gaps, which means that higher compressions can more easily be bridged.

Laminated pole-shoes are used instead of the solid, soft gray iron type, which reduces eddy currents as well as produces a hot spark at low speed. Due to the difficulty of cranking high compression engines,



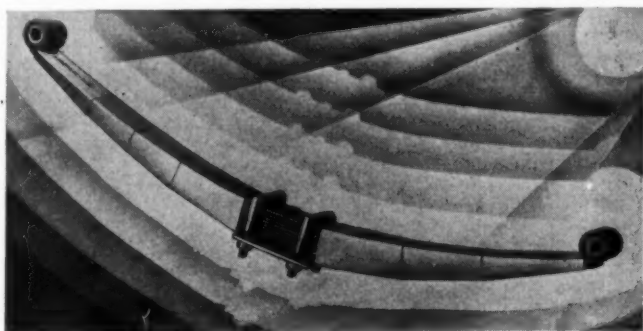
Weaver Hand Operated Rim Stripper

pneumatic tires from disc wheels or solid rims from 18 to 24 in. in diameter, performing in a few minutes an operation which often takes considerable time. As the machine is hand operated, there is slight danger of injury to the tire, and the simplicity of construction assures dependability. Briefly explained, the operation of the machine consists of gripping the disc-wheel or rim in a chuck which has three expanding jaws. Then six adjustable fingers, which move in and out to fit various sizes of tires and rims, are placed against the sides of the tire and, as the chuck and rim are drawn inward by the hand wheel, the stationary fingers force the tire off the rim.

The screw has a diameter of 2 $\frac{1}{4}$ in., and with the large handwheel furnished, is capable of exerting a pressure of 20,000 lbs., ample to handle the most difficult tires.

New Anderson Device Increases Riding Comfort

THE Anderson Manufacturing Company, Cambridge, Mass., has recently brought out a new device which increases and preserves the riding comfort of motor coaches. This is the Anderson-Ajax Steel Spring Cover, a metal armor, that seals in spring



Anderson-Ajax Steel Spring Cover

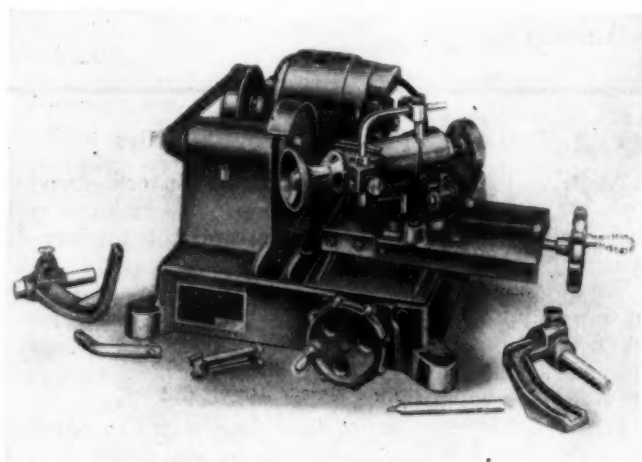
lubricant and protects the springs from rain, mud and road dust. The outer surface is lead coated and enameled to resist corrosion, and the inner lining of fabric is designed to absorb a penetrating graphite lubricant allowing it to work between the spring leaves as it is required.

Constant, even, lubrication is important in obtaining controlled spring action and the Anderson-Ajax cover is intended to give adequate lubrication for long periods without the necessity for frequent renewal.

Van Norman Valve Refacer

THE Van Norman Machine Tool Company, Springfield, Mass., has recently announced an addition to their line of valve refacers. The new tool, known as model H, is designed for heavy-duty service and has a chuck capacity of 11/16 in.

It will reface valves having seat angles between 30 and 60 degrees and it can also be used to sharpen re-



Van Norman Type H Valve Refacer

seating cutters, to square the ends of valve stems and to reface rocker arms. The valve head is quickly aligned by dowel pin settings at the 30, 45 and 60 degree position and the valve is securely held by a split collet. The valve head slide is operated by a wheel control and has slides which are adjustable for wear. The grinding wheel runs on ball bearings which are supported by an extension of the base casting.

Vickers Hydraulic Jack Has Enclosed Mechanism

A HEAVY-DUTY direct-lift hydraulic jack for use in garages has been brought out by the Vickers Manufacturing Co., Benton Harbor, Mich. This model has been specially designed for motor coach service and has a lifting capacity of eight tons.

The design is simple, and all reciprocating parts are enclosed and protected from mud, sand, grease or damage from external sources. In operation the load is lifted directly upward on the plungers there being



Vickers Floor Jack for Motor Coaches

no leverage construction with its highly stressed bearing surfaces. A safety valve prevents damage from overloading.

No lubricating oil or leather packings are used, and the slow leakage sometimes encountered with this type of construction has been eliminated. The releasing lever is on the handle of the jack and operates in any position. This jack is especially suited for use on the wash rack, as no water or mud can reach its working parts.

By means of an extra extension head, the jack may be used for lifting bodies, removal of springs and shackle bolts and other similar operations. Without the extension, the low point is 6 1/2 in. and the high point 13 1/2 in. from the floor.

Every-Day Problems

of Motor Coach and
Truck Operation



This Month's New Questions

Question No. 22

What About Express Traffic?

"To what extent are motor coach operators attempting to develop express traffic? How is the solicitation of this business carried on, and what commodities are most frequently handled? Is the express moved only between stations, or is it picked up at the shipper's door and delivered to the consignee? Is a special express compartment in the motor coach necessary? Who collects shipping charges, and what is the basis of rates? Is express traffic profitable and worth going after?"

Question No. 23

How Close a Check on Maintenance Costs?

"Is it worth while to determine maintenance costs currently for each vehicle, or is it as satisfactory merely to determine maintenance costs for the fleet as a whole? What efforts are made to check the day-to-day performance of each vehicle and each major unit in each vehicle? What employee is responsible for preparing maintenance cost data, and how much of his time is required for this purpose? Is the expense of keeping exhaustive cost records justified by the constructive use to which they are put? In other words, are detailed cost records actually used, or are they merely kept?"

What Is Your Answer?

Replies to Question No. 20

Operating Trucks in Freight Service

"What kinds of freight train service have you found it profitable to replace with motor truck service? Have definite economies or increased traffic resulted from such substitutions? Is store-door collection and delivery provided; if so, is an additional charge made? Have shippers paid this charge without objection? At rates comparative to rail rates, can l.c.l. freight be handled by motor truck at a profit?"

Trucks Profitable Up to 100 Miles

We have used motor trucks to replace local freights with the result that the movement of less than carload freight has been speeded up and the number of local freight trains operated has been decreased.

We do not perform a pick-up and delivery service on interstate business with Boston & Maine Transportation Company trucks, as the Interstate Commerce Commission have ruled that this can not be done unless provided for in tariffs.

We feel that less-than-carload freight can be handled by motor truck at rail rates up to 100 miles in our territory at a profit.

J. R. MACANANNY,
Assistant Freight Traffic Manager, Boston & Maine.

Trucks Handle L. C. L. Freight at a Profit

In certain territories local freight train service has been profitably discontinued through the substitution of motor truck service. Definite economies as well as some increased traffic has resulted from such substitution. Store door collection and delivery has been provided in connection with "rail substitution," at an additional charge in each case, although such service has only been inaugurated at the request of individual shippers or receivers who have agreed to the payment of an additional charge over and above the published freight rates for the line haul. On high class freight, under probably the first three classes, l.c.l. freight can profitably be handled by motor trucks at rates comparable to rail rates.

Since the substitution of motor trucks for local freight train service on certain parts of our territory, we have found it possible to make very definite rail operating economy, have been able to give in most cases a much more expeditious service, and in many cases have provided a daily instead of a tri-weekly service, as had obtained previously, which has resulted in the return of considerable traffic to the railroad which had formerly been transported by other means. In the matter of claims, the trucks have handled the freight probably with less loss and damage than obtained on the rails. In our case, trucks are handling better than 500 tons of l.c.l. freight a day, and we estimate that at least 65 percent of this freight has been speeded up between shipper and consignee by 24 hours.

G. W. WOOD,

Freight Traffic Manager, New York, New Haven & Hartford.

Truck Service Effects Economies

We have found that motor truck service can satisfactorily replace the handling of merchandise by trains only on local runs.

Very definite economies and increased traffic have resulted from substitution of motor truck service for way-freight service. The economies are the result of lengthened daily runs of way-freight trains, and the increased traffic results from the fact that the merchandise is handled much more speedily, and store door collection and delivery is provided.

Prior to the recent order of the Texas Railroad Commission, store door collection and delivery was afforded by truck rates but without special charge therefor—but two classes were used: a standard class—the rate for which was approximately 110 per cent of the third class rate; and the class embracing the use of special equipment, such as light, fragile or bulky articles which took a rate of one and one-half times first class. Shippers made no objection to this charge although it was higher than rates of our competitors. In compliance with the recent order of the Texas Railroad Commission, we are now charging standard rail rates for truck service which means that store door delivery and collection is made without extra charge.

Motor trucks can handle freight at railroad l.c.l. rates at a profit for any distance up to 75 miles; for distances in excess of 75 miles and under 200 miles they can handle freight at the l.c.l. rates at a profit only if they are able to enjoy a substantial backhaul. It is my judgment that for distances over 200 miles, trucks cannot handle traffic profitably at railroad rates, except under unusual circumstances, based on the railroad rates which are currently applicable in Southwestern Territory.

J. R. TURNEY,

Vice President, St. Louis Southwestern.

Quick Service Increases Traffic

We have not found it practicable to replace freight train service generally with motor truck service. In one or two cases we have replaced a local freight train by motor trucks. In those cases definite economies in operating costs resulted.

The method of operation on the Baltimore & Ohio has been that both less than carload work and the carload switching have been done by the same local freight trains. Our experience has developed that if the less than carload work is taken away from the trains and transferred to motor trucks the local freight trains still must be operated to take care of the carload switching, with the result that the saving in overtime which might come through the elimination of the l.c.l. work is not sufficient to justify the operation of the motor truck.

We have in one or two cases inaugurated a motor truck service for the movement of l.c.l. freight from outlying stations to main stations. This has resulted in speeding up the movement of the freight and has brought about increases in traffic, though no economies in operating costs. In none of these cases is store-door delivery and collection provided.

With the improvements in motor trucks through the use of pneumatic tires, stronger frames, etc., the range of activity of the motor truck is gradually increasing. Various analyses which have been made indicate that cost of operation is but one of the reasons why motor trucks are used, among the others being the store-door feature, expedited service, possible saving in crating expense, competition with other firms who may be using motor trucks, etc.

M. F. STEINBERGER,

Manager Highway Transportation, Baltimore & Ohio.

Finds Store-Door Delivery Popular

The Wilson Transportation Company has not substituted or replaced any freight train service with motor truck service.

Store door collection is provided in about 25 per cent of the aggregate and store door delivery is provided about 100 per cent. Tariffs of the company average 5 cents per hundred over rail rates, and covers store door collections and deliveries. Shippers have paid this charge without objection.

It would be our opinion that, under a sufficient volume of traffic, l.c.l. freight can be handled by motor trucks at a profit with rates comparative to the rail rates, for hauls of not to exceed 100 miles.

CARL R. GRAY, JR.

Vice Pres. & Gen. Mgr., Chicago, St. Paul, Minneapolis & Omaha.

Replies to Question No. 21**Large or Small Motor Coaches**

"What considerations are involved in determining the seating capacity of the motor coaches assigned to any route? What difference has been found in the cost of operation of 18-20 passenger equipment and that of 29-33 passenger equipment? From the standpoint of traffic development, is it preferable to run two smaller coaches with double frequency of schedules rather than

one larger coach? If so, is the extra traffic secured sufficient to justify the extra cost? Do you anticipate a trend in the future toward larger or smaller motor coaches?"

Trend Toward Larger Coaches

We find that the traffic density of the line determines the seating capacity of the coach. Where the population of the territory contiguous to the highway over which operations are performed is one-hundred or less per mile, a sixteen passenger coach has been found ample to take care of all traffic offered, except on weekends and holidays. In such cases sufficient reserve equipment is kept at proper locations to double-head if necessary.

Our experience shows that the approximate cost of operation of various sized coaches will average one cent per passenger seating capacity, i.e., 18 passenger costs 18c per mile, 29 passenger costs 29c per mile, etc. This cost includes, of course, everything chargeable, such as depreciation, maintenance, taxes, etc.

From the standpoint of traffic development we find that it is preferable to run two smaller coaches rather than one larger coach. With more frequent service patrons will use the motor coach instead of their privately owned cars as the cost is less. More frequent service also tends to close the highway to wildcat operations. More frequent service brings to the coach companies increased revenue by reason of their handling additional express, U. S. mail, contracts, newspapers, etc.

We believe that as the country becomes more densely populated the highways will, of necessity, be concreted and as they are made hard surface, the traffic will increase, making necessary larger coaches. In the sparsely settled territory where only partially improved roads are maintained, such as gravel, the smaller coaches will amply take care of all traffic offered, operating double-head when necessary.

P. J. NEFF,

Vice President & Gen. Mgr., Missouri Pacific Transportation Co.

Maintenance of Small Coach Lower

By our office check of the off and on sheet we are able to determine where and when the larger capacity equipment should be used. There is a difference in cost of operation between a fifteen to twenty passenger unit and a twenty-nine to thirty-three passenger unit of approximately three or four cents a mile. This quite naturally comes in maintenance cost only.

It is preferable to run one larger coach instead of two smaller ones with double frequency of schedules on a particular run. This has been our experience thus far and has covered our policies as the thirty-three passenger coach has been in existence in the Northwest for a considerable time. I likewise feel that the trend in the future definitely points toward larger capacity coaches.

R. W. BUDD,

President, Northland Transportation Co.

Small Units on Feeder Lines

The volume of travel to be handled during peak hours is the guiding feature, together with the frequency of the service operated and operation of a unit which will handle this peak of travel without the necessity of resorting to more than one section.

Our experience on competitive routes would indicate that passengers prefer an express service with a reasonably fast schedule and it appears that they are not concerned over the size of the unit in which they ride but are concerned more with the general comfort and attractiveness of the vehicle, speed schedule and rate of fare; this latter item, of course, being the primary inducement in attracting travel to the highway in territory that is served by rail and highway service. We find that the most economical operation results from a schedule frequency which is justified by the travel offered and which can all be handled by one coach. It is uneconomical to operate more than one coach on a schedule unless a sufficient payload can be carried in the second coach. The even movement of travel in each direction is also essential as, otherwise, it means heavy riding one way with small revenue returns the opposite way.

On one of our heavily traveled routes the company plans in the near future to substitute 33 passenger units in place of the 27-29 passenger units now in use. The new units will not only afford increased comforts but will effect more or less economy as it is anticipated that in many instances we will avoid the necessity of operating two coaches on one schedule.

It appears that the 33 passenger unit on a 33 foot overall length chassis with deluxe parlor car body is becoming more and more accepted as a standard production. Some of the states in the East have overall length limitations and Massachusetts with its 33 foot law practically governs our operations in this respect. On certain routes where peak travel conditions require more than 33 passenger units there are in production 39-41 passenger units and, with the state regulations as authorized by the various state commissions and which usually provide for the privilege of standing as high as 25 per cent of the rated seating capacity of the coach, the legalizing of a total load of 48-50 passengers is possible on a coach rated at 39-41 passenger unit. On lines where light travel is offered and these lines are considered necessary to serve the sparsely settled communities and act as feeders for the major lines, small capacity units are the logical choice and these conditions should be kept in mind when equipment requirements are surveyed.

H. M. WALKER,

General Superintendent, New England Transportation Co.

Operating Costs Practically Identical

In determining the seating capacity we make an analysis of past revenue on the operation and the off and on records to determine the peak loads at transfer points and principal way points. We also take into consideration the volume of delivery from interline carriers.

Our experience indicates that the fixed costs of operating both large and small equipment are identical. Taking into consideration gasoline and oil consumption, maintenance cost and depreciation, the cost of operating the larger equipment is about 2 cents per mile more than the smaller.

From the standpoint of operating cost and of passengers there is no preference for either size coach; from the standpoint of traffic development and frequency of service, it is a decided feature in building traffic. We believe the trend will be toward larger equipment except for pioneering new operations and for frequent service on short local lines.

JOHN B. WALKER,

Sales Manager, Greyhound Management Company.

Motor NEWS

Union Pacific Purchases

33 New Motor Coaches

Continuing to expand its fleet of motor coaches, the Union Pacific has announced the purchase of 33 more pieces of equipment, including 30 motor coaches of 34-passengers capacity, 2 of 26-passengers capacity and 1 of 21-passengers capacity. Twenty-two of these motor coaches will be used on the lines between Chicago and Los Angeles, Cal., operated by the Interstate Transit Lines, and 11 on the routes between Salt Lake City, Utah, Spokane, Wash., and Portland, Ore., operated by Union Pacific Stages and the Interstate Coach Company. The Union Pacific now has in operation more than 300 motor coaches.

Motor Vehicle Taxes

Increased During 1929

American Automobile Association survey shows 13 per cent rise over 1928

State motor vehicles taxation continued its upward trend in 1929, increasing 13 per cent over 1928 or nearly three times as much as motor vehicle registrations, according to a recent statement issued by the American Automobile Association.

The increase in motor vehicle registrations for the United States last year, the survey points out, was 8.6 per cent, while the increase in the total amount of special motor taxes (exclusive of personal property taxes) for the 48 states and the District of Columbia, was 22.8 per cent.

The average per vehicle tax for the entire country was \$28.56 in 1929 as compared with \$25.24 in 1928; this per vehicle tax was found to have increased more than 300 per cent since 1919, when it was \$8.55.

Special taxes collected from motor car owners by the states reached a new high peak last year, according to the survey. The total was \$767,011,595 as compared with \$624,325,670 in 1928, an increase of \$142,685,925. At the same time revenue from gasoline tax increased 32 per cent in 1929, the total being \$422,216,641 as compared with a total of \$319,906,417 in the previous year.

Reading and Jersey Central Expanding Highway Services

Joint New York-Philadelphia Motor Coach route established—Reading also installs initial truck service

The Reading Transportation Company, highway subsidiary of the Reading Company, on April 6 increased its Philadelphia-New York motor coach service, begun in March on a limited schedule, to six round trips daily. This service is operated by the Reading Transportation Company on its own behalf between Philadelphia, Pa., and Somerville, N. J., and from Somerville to New York on behalf of the Jersey Central Transportation Company, highway subsidiary of the Central of New Jersey. The arrangement is similar to that under which the motor coach service is operated between Harrisburg, Pa., and New York, i.e., the Reading Transportation Company operates in its own behalf from Harrisburg to Reading and between Reading and New York in behalf of the Jersey Central Transportation Company.

The division of joint highway mileage between the two transportation companies is approximately the same as that between the two parent railway companies.

The motor coach service between New York and Philadelphia follows as closely as practicable the railway lines of the Reading and Jersey Central between those points; although, because of the way the highways are laid out, one or two of the points served by the rail lines are not reached by the motor coach lines. There are several points reached by the motor coach lines which are not on the direct New York-Philadelphia route of the two railways.

It is planned, beginning with the new schedules which take effect on April 27, to increase the service on the New York-Philadelphia route.

(Continued on page 1044)



Mack Motor Coach in New York-Philadelphia Service of Reading and Jersey Central

Railway Express Agency Refused Certificate by Ohio Commission

*Deprived of right to operate where train service
was discontinued because of prior per-
mits to other truckers*

Rearguments were heard on April 22 before the Ohio Public Utilities Commission in the case wherein the Railway Express Agency, Inc., was recently denied the right to operate motor trucks for the transportation of express between certain communities where railroad service, previously used by the express company, had been discontinued.

The commission's order held that such operation would constitute the Railway Express Agency a motor transportation company and that it is not entitled to a certificate of convenience and necessity for service between points that are served by other truck companies under previously-issued certificate. The decision is somewhat analogous to that, rendered by this same commission and recently upheld by the Ohio Supreme Court, in connection with a contract trucking operation of the New York Central. This latter ruling of the court is cited by the commission in the present order which was reviewed in a recent dispatch from Columbus to the United States Daily.

Under the Ohio law, the order discloses, when any need for additional service is shown in a territory served by an existing company, that company must be given a reasonable time, not less than 60 days, in which to provide such additional service. Objections to the granting of a certificate to the express agency were made by companies serving part of the territory sought to be served by the agency.

The Railway Express Agency, Inc., the commission states, is engaged in conducting an express transportation busi-

ness which is nation-wide in scope, and for many years prior to July 1, 1929, it or its predecessors maintained agencies in certain communities where the service was conducted over the Wheeling & Lake Erie.

On July 1, 1929, the train service of the railroad was discontinued, since which date the express agency has given service to those communities by means of its own trucks.

The express company did not have a certificate of convenience and necessity from the commission, but on Nov. 6, 1929, filed an application for such certificate over the public highways, the order states.

To this application, it is recited, the Frazier-Young Trucking Company and William Simmons, doing business as Carrollton Trucking Company, filed objections on the ground that they are the holders of certain certificates for the transportation of property between some of the communities sought to be served.

An attorney-examiner for the commission held a hearing, at the conclusion of which the protestants moved to dismiss the application for the following reasons, the order says:

"(1) The evidence does not show that inadequate service is being rendered by the existing motor transportation companies, protestants herein, at the points on the proposed route served by them.

"(2) As to the two remaining points of Dellroy and Oneida not a syllable of evidence has been offered to show necessity for the proposed service.

"(3) That the application is not accompanied by a proper exhibit of sched-

New York Central Applies for Ohio Trucking Permit

The New York Central has applied to the Public Utilities Commission of Ohio for a certificate of convenience and necessity to permit the operation of motor trucks for the transportation of freight between Cleveland, Ohio, Toledo and Danbury, a distance of 196 miles.

This application is the result of the recent decision of the Supreme Court of Ohio, which sustained the ruling of the commission that a railway, in order to make use of motor trucks for the transportation of freight, must hold an operating permit issued by the regulatory commission. The New York Central is now supplementing its railroad service with truck service and handling l.c.l. freight by motor truck wherever possible, and it has asked the Ohio commission, in view of its pending application, to suspend its order requiring the railway to discontinue its motor operations.

ule of rates as required by the law and the rules of the commission.

"(4) The applicant admits that it is now and has been, since July 1, 1929, transporting property over the proposed route and using the same truck described in the application herein without first having obtained a certificate of public convenience and necessity from this commission and in violation of the law of this State and the rules of this commission and is, therefore, not a fit party to be granted a certificate.

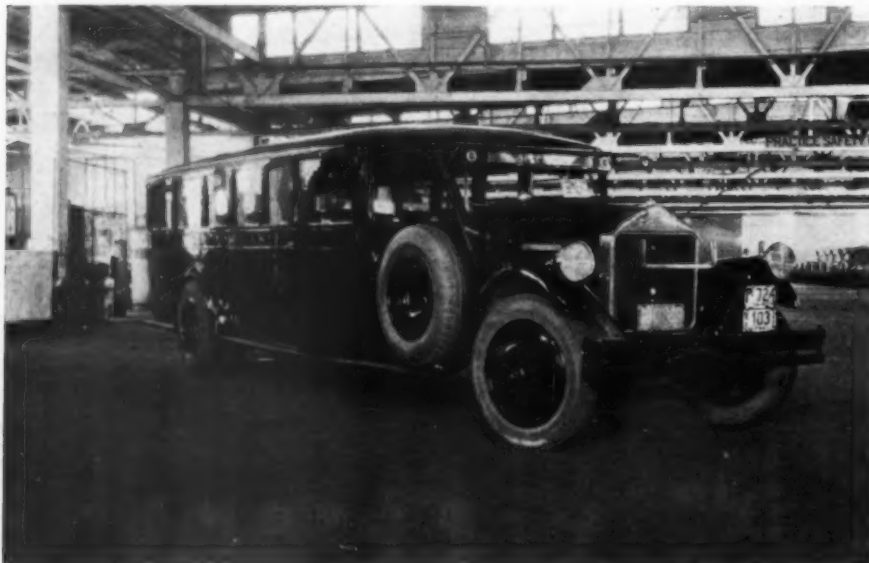
"(5) The existing motor transportation companies in the territory, protestants herein, are ready, able and willing to put on all additional service that may be found necessary over their respective routes and if any need for additional service is shown, insist that they shall be given a reasonable time not less than 60 days, in which to provide such additional service as required by section 614-87, General Code."

The attorney-examiner recommended to the commission that the motion to dismiss be sustained in every particular. The applicant excepted and moved to dismiss the proceeding on the ground that the commission had no jurisdiction. Following these statements, the order of the commission proceeds in full text:

The express company's motion to dismiss, for want of jurisdiction, is quite inconsistent with the prayer in its application and needs no further comment, since it is certainly without authority to deny the jurisdiction that it, of its own motion, has invoked.

By its statement that: (A) The commission has no jurisdiction and (B) that the proposed operation is interstate in character and for that reason beyond the jurisdiction of this commission, we be-

(Continued on page 1044)



In the New England's Garage at Providence, R. I.

**Commission Order Upheld
in Interstate Transit Case**

The order of the Kansas Public Service Commission granting to the Interstate Transit Lines, motor coach operating subsidiary of the Union Pacific, authority to operate motor coaches in intrastate service from Kansas City across the state of Kansas to the Colorado state line, was affirmed by the district court of Shawnee county on April 5. The issuance of the certificate of public convenience and necessity to the Interstate Transit Lines by the Public Service Commission was contested by Pickwick-Greyhound Lines, Inc., which first applied for an injunction to suspend the commission's order, and then asked for a review of the evidence submitted to the commission in connection with the original application.

According to the certificate issued, the Interstate Transit Lines cannot do any local business between Topeka, Kan., and Salina, but can do local business between other points on the cross-state route.

**Southland Greyhound Stock
Acquired by Southern Pacific**

A one-third stock interest in the Southland Greyhound Lines has been purchased by the Southern Pacific Lines. The Southland Greyhound Lines operate over 3,165 miles of motor coach routes exclusively in the state of Texas, except one interstate line operating between Houston, Tex., and Lake Charles, La.

**Pennsylvania General Transit
Applies for Trans-Ohio Routes**

On April 9, the Pennsylvania General Transit Company filed with the Public Utilities Commission of Ohio applications for motor coach operating certificates to cover four routes across the state of Ohio, three extending the entire width of the state, between the east and the west, and one from the eastern border of the state to Toledo.

**Omaha Subsidiary Opens Truck
Terminal at Sioux Falls, S. D.**

Fred W. Sargent, president of the Chicago & North Western, and Carl R. Gray, Jr., vice-president and general manager of the Chicago, St. Paul, Minneapolis & Omaha, participated in the opening of a new trucking terminal and merchandise station at Sioux Falls, S. D., on March 28. The terminal, with facilities for handling 250 tons of merchandise daily, is the largest in the northwest. It is used by the Wilson Transportation Company, the motor truck operating subsidiary of the Omaha.

**Georgia Motor Coach Regulation
Law Sustained by Court Decision**

*Ruling in recent case upholds constitutionality of
act and right of state commission to
supervise operations*

The Motor Carriers act providing for the regulation, by the Georgia Public Service Commission, of intrastate motor carriers has been upheld in a recent decision of the District Court for the northern district of that State.

The Southern Motorways, Inc., plaintiff in the case, contended that the act was unconstitutional as to its provisions demanding a certificate of public convenience and necessity as a condition of its carrying on business, its demand for a fee therefor, its fixing and limiting schedules and its power to revoke certificates for noncompliance with the commission's regulations. The court decision, however, upheld the law on the grounds that motor coach companies though perhaps not common carriers in every sense of the term, were subject to regulation through the State's power to control business on the highways, which includes the power to limit or even exclude carriers from their use.

Excerpts from the opinion, as reported in a recent dispatch to the United States Daily, follow:

This bill challenges the constitutional validity of the act of the Georgia Legislature approved Aug. 29, 1929, which defines and regulates "motor carriers" upon the public highways, and subjects them to the jurisdiction and further regulation of the Georgia public service commission. The complainant is a Georgia corporation, whose charter was granted Sept. 12, 1929, wherein the business authorized to be conducted is "operating automobiles, motor buses and coaches for hire for the transportation of passengers and freight, and in con-

nection therewith to have passenger and freight depots, warehouses, etc." On Sept. 30, 1929, complainant applied to the Georgia public service commission for the issuance of a "certificate of public convenience and necessity," required by the act, and asked to be allowed to establish rates and schedules between Atlanta and Macon, Macon and Savannah, Macon and Waycross, all in Georgia, and from Atlanta to Chattanooga, in Tennessee.

The application concludes with the statement that applicant is familiar with the above mentioned act and the rules and regulations made in pursuance of it by the commission, and a promise to comply with them. The commission granted a certificate, but refused permission to operate schedules between Atlanta and Chattanooga. On Nov. 26, 1929, schedules between Macon and Atlanta were fixed for complainant and for two competing companies, to wit: Greyhound Lines, Inc., and Colonial Stages, Inc. About Dec. 9, 1929, complainant applied to the commission to establish additional schedules between Macon and Atlanta, which was denied.

On Mar. 3, 1930, the commission cited complainant to show cause on Mar. 12, 1930, why its certificate should not be revoked for failure to observe schedules, for failure to run regularly, and for its failure to give the service which complainant had proposed. The complainant then filed this bill asking an injunction against the revocation of its certificate and against the enforcement of the commission's order restricting its

(Continued on page 1045)



Motor Coach in Service of South African Railways

Pickwick and Affiliates Enter Interchange Plan

*Announce reciprocal ticketing
agreements with several
large coach lines*

Pickwick-Greyhound, California Transit, Southern Pacific Motor Transport and affiliated motor coach lines recently announced that traffic agreements had been entered by them with the principal motor coach lines operating in the East and Middle West. The announcement states that the new plan makes possible the reciprocal sale of tickets by all of the larger motor coach lines throughout the country.

Under the reciprocal tariffs, which became effective on March 15, tickets are issued by Pickwick and affiliated lines to all points touched by the lines of the following operators: Florida Motor Lines; Northland Greyhound Lines; Gray Coach Lines, operating from Buffalo, N. Y., to Toronto, Canada; Sioux Falls Traction Company, serving Iowa and South Dakota points; Boston & Maine Transportation Company; New York-Montreal Coach Lines; Safety Transit Lines and Camel City Coach Company, serving North and South Carolina, Georgia, Florida and Virginia. Tickets over the Pickwick and affiliated lines are likewise sold by all of the foregoing companies.

In commenting upon the agreement, Charles F. Wren, president of the Pickwick Stages System and the Pickwick Greyhound Lines, said, "The reciprocal tariff agreement is another long step toward the goal of more complete and comprehensive transportation service for motor coach travelers throughout this country and also in Canada and Mexico. Agreements have been entered into only with those lines which have built up a dependable service satisfactory to the public."

Highway Route Applications Filed by Tennessee Central

The Tennessee Central has applied to the Tennessee Railroad and Public Utilities Commission for permission to operate motor coaches and trucks for the transportation of passengers and freight between Nashville, Tenn., and Cookeville, between Cookeville and Clarksville, and between Crossville and Knoxville. It also proposes to operate between Nashville, Clarksville and Hopkinsville.

Sale of Rail-Highway Tickets Discontinued by Pennsylvania

The Pennsylvania on April 13 discontinued the sale of joint railway and highway tickets, which provided for railway transportation in Pullman cars at night and motor coaches by day between Eastern seaboard points and its western termini. The highway portion of the journey was provided under

arrangements with the Greyhound Lines, long distance motor coach operators, in which the Pennsylvania is interested.

Discontinuance of this combination service accompanied cancellation by the Baltimore & Ohio of its tariff providing a reduction in all-rail coach fares on specified trains between New York, Philadelphia, Baltimore, Washington and Pittsburgh. The Pennsylvania had filed a protest against the B. & O. tariff stating that the fares proposed were the equivalent of the highway motor coach fares between the points named and that the attempt to meet motor coach fares with rail service at the same rates would tend to destroy the railroad fare structure.

Pickwick Nite Coaches Now on Kansas City-St. Louis Run

The first Pickwick Nite Coaches to go into service in the East were placed in operation on April 15 over the lines of the Pickwick-Greyhound system between Kansas City and St. Louis. Two sleepers were installed on this route, and it is planned to place two others in service between St. Louis and Chicago and perhaps two between New York and Boston.

Iowa Permits Granted Two Trans-State Coach Lines

The Pickwick-Greyhound Lines and the Rock Island Motor Transit Company have recently been granted certificates by the Iowa Board of Railroad Commissioners for the operation of motor coach routes in that state between Des Moines and Council Bluffs. These new lines will form a part of the trans-State routes which both highway companies plan across Iowa.

The decision of the board was accompanied by a minority report on the case. This latter held that the territory should be restricted to one highway carrier and that the certificate should issue to the Pickwick-Greyhound Lines by reason of its prior application and the fact that it already operates a through motor coach line over the route involved.

Pickwick Announces Duplex 53-Passenger Motor Coach

The Pickwick Corporation has recently completed initial road tests of a new 53-passenger motor coach to be known as the Pickwick Duplex. The Duplex is designed for interurban day travel, but is built along lines similar to the Pickwick "Nite Coach." An outstanding feature of the new vehicle, the announcement states, is the six-cylinder, 150-h.p. Sterling motor, which weighs about 1800 pounds and which may be removed and a complete new power plant installed in 20 minutes.

The Duplex, like the Nite Coach, was designed by Dwight E. Austin, vice-president and general manager of the Pickwick Motor Coach Works, Los Angeles, Cal.

Railway Loses Case Against Truck Line

*Louisiana Supreme Court Ruling
adverse to Yazoo &
Mississippi Valley*

The Public Service Commission of Louisiana has been sustained by the Supreme Court of that state in the first case to come before that court involving the right of the commission to issue certificates of convenience and necessity to motor carriers under a law enacted in 1926, says a recent dispatch from Baton Rouge to the United States Daily. The case involved the commission's authorizing the Motor Freight Lines, Inc., to operate a common carrier highway freight service between New Orleans and Baton Rouge and intermediate points.

The order was contested by the Yazoo & Mississippi Valley Railroad which carried the case to the District Court of East Baton Rouge. This latter upheld the order and its decision is affirmed in the present Supreme Court decision.

The following statement was issued by the Louisiana Public Service Commission on April 2 in connection with the decision:

In a unanimous opinion and decision of the Supreme Court of Louisiana handed down this morning, the validity of an order of the Louisiana Public Service Commission, authorizing Motor Freight Lines, Inc., to operate a common carrier motor freight service between New Orleans and Baton Rouge and intermediate points was sustained. It is the first case reaching the Supreme Court involving the right of the commission to issue freight and passenger motor line permits under the provisions of Act 292 of 1926.

After extensive hearings before Chairman Williams the commission found that the public convenience and necessity required the operation of such a line between Baton Rouge and New Orleans. The Yazoo & Mississippi Valley Railroad Company contested the validity of the order in the District Court of East Baton Rouge, where the order was upheld, and the appeal to the supreme court then followed.

The railroad company in its suit alleged that it was adequately serving the transportation needs of the public and that the public interest did not require or justify the entrance of motor carriers into the field. It also contended that the commission in issuing the certificate gave consideration only to the public convenience and disregarded the question of necessity, and that the commission further acted under an erroneous conception of the law in that Act 292 did not require the commission to issue such certificates but merely permitted them to do so upon proper showing that the public interest would be served.

The court held that the term "convenience and necessity" must be considered as a whole and sustained the contention of the commission that the evidence amply justified the issuance of the certificate.

Complaints Dismissed by New Jersey Board

Allegations of Public Service against De Camp Lines not sustained

The Board of Public Utility Commissioners of New Jersey has dismissed two recent complaints of the Public Service Co-ordinated Transport against the De Camp Bus Lines, Inc., alleging unlawful intrastate operation in New Jersey by the latter.

The first of these decisions, dated March 28, was based upon the complaint of the Public Service alleging that the De Camp Lines was conducting an intrastate service on its Orange-New York City interstate route. Evidence at the hearing, according to the decision, revealed that on November 19, 1929, an employee of the Public Service Co-ordinated Transport boarded a motor coach owned by the De Camp Bus Lines, Inc., at Twelfth Street and Jersey Avenue, Jersey City, N. J., and alighted from the motor coach at Broad and Bridge streets, Newark, N. J. "It appears from the testimony of the complainant's witness" the board said, "that he requested the driver of the motor coach to take him as well as a friend as a personal favor from Jersey City to Newark, despite the fact that the driver of the motor coach was reluctant about accepting an intrastate passenger. The proofs submitted by the complainant do not show a willful violation of the law by the De Camp Bus Lines, Inc., and for this reason the board will dismiss the complaint."

The second decision dated March 31, followed the complaint by the Public Service alleging that the De Camp Lines was conducting an intrastate business between Caldwell, Montclair and New York City, without having the municipal consents for such operation.

Testimony in this case revealed that the De Camp Bus Lines, Inc., operate an intrastate service on its Caldwell-Montclair-New York City route, and also an interstate service between Upper Montclair, Montclair and New York City, these two lines converging at Montclair Center. The complaint was to the effect that the motor coaches of the De Camp Lines leaving Caldwell for New York pick up passengers between Caldwell and Montclair and after so doing the motor coaches upon arriving at Montclair Center, transfer these passengers from one motor coach to another. The complainant maintained that when the passengers who boarded the motor coach in Caldwell or Verona and in certain parts of Montclair are transferred at Montclair Center they became intrastate passengers.

The testimony of Ralph De Camp, president of the De Camp Lines, indicated that during certain rush hours, a 15 minute service from Montclair will not carry all the passengers and it is necessary to operate from six to twelve additional motor coaches into New York every morning. These motor coaches

leave Caldwell on a 15 minute headway and are so scheduled that they arrive at Montclair Center one or two minutes ahead of the motor coach operating from Upper Montclair. The Upper Montclair motor coach oftentimes carries standees. In this case the company transfers the standing passengers from the Upper Montclair motor coach to the extra motor coach which has come from Caldwell, and then this latter is sent into New York. The respondent contended that this operation is necessary in order to provide proper service during the rush hours and to provide a seat for every passenger leaving Montclair Center, inasmuch as the Holland Tunnel regulations prevent the carrying of standees through the tunnel.

"The journey of the passengers appears to be a continuous interstate trip in good faith, with a slight interruption, which is caused by the transferring of interstate passengers at Montclair Center," the decision finds. "We are of the opinion that the facts in the present case do not constitute intrastate operation by the respondent and therefore the complaint is hereby dismissed."

Additional Kansas City-Topeka Runs Denied Interstate Transit

The Kansas Public Service Commission has denied the application of the Interstate Transit Lines for permission to increase its service between Kansas City, Mo., and Topeka, Kan., from two round trips daily to six round trips daily. At the present time, the service provided between Kansas City and Topeka is part of the transcontinental service operated from St. Louis to Denver, Colo.

Pennsylvania General Transit Denied Pennsylvania Route

The Public Service Commission of Pennsylvania in a recent order denied the application of the Pennsylvania General Transit Company, highway subsidiary of the Pennsylvania, for a certificate to operate an intrastate motor coach line between Morrisville and Philadelphia, Pa. The application was denied on the ground that the proposed line would create competition with existing rail and motor coach carriers which competition would be apt to drive the latter out of business.

"For the greater part of the distance between Morrisville and the Philadelphia city line," the commission stated "the route of the proposed operation practically parallels the trolley line of the Trenton, Bristol & Philadelphia Railway Company, and local motor coach service is rendered over the route by the Delaware River Coach Company, a subsidiary of the trolley company." The commission therefore concluded that the dominant factor in its decision should be the danger of even greater inconvenience to the public resulting from the competition the proposed route would establish because it would undoubtedly hasten, or make inevitable, total cessation of service on the trolley line.

Pacific Greyhound Lines Formed in California

Affiliated Pacific Coast Companies to be brought under common operating name

Several affiliated motor coach lines now operating on the Pacific coast will be merged into the Pacific Greyhound Lines, Inc., according to articles of incorporation filed on April 11 with the secretary of State of California. The lines involved are the Pickwick Stages System, California Transit Company, Peninsula Rapid Transit Company, Pacific Auto Stages, Golden Gate Stages, Pacific Coast Motor Coach Company, Kern County Transportation Company, Southern Pacific Motor Transport Company and the Calistoga & Clear Lake Stage Company.

Executive offices of the Pacific Greyhound Lines, Inc., will be maintained in San Francisco. The new company, according to the statement of counsel, will bring under a common operating name as well as a common management the leading motor transportation companies now operating in California. An application was simultaneously filed with the California State Railroad Commission to permit the transfer of operating rights to the Pacific Greyhound Lines, Inc. No change of ultimate ownership or policy is contemplated. Directors of the new corporation are:

T. B. Wilson, C. R. Harding, Earl A. Bagby, C. E. Wickman, Frank W. Webster, C. F. Wren, Merle H. Lewis, William E. Travis and Warren E. Libby.

Rio Grande Motor Way Seeks New Coach Route in Colorado

The Rio Grande Motor Way, Inc., motor coach operating subsidiary of the Denver & Rio Grande Western, has applied to the Colorado Public Utilities Commission for permission to operate motor coaches between Durango and Mancos, the gateway to the Mesa Verde national park.

Centralization of D. & R. G. W. Highway Services Permitted

The application of the Rio Grande Motor Way, Inc., a subsidiary of the Denver & Rio Grande Western, for permission to take over the operating permits of the Western Slope Motor Way, Inc., has been granted by the Colorado Public Utilities Commission. The Western Slope Motor Way is also a subsidiary of the Denver & Rio Grande Western, with its operations in the vicinity of Grand Junction, Colo. The Rio Grande Motor Way has previously carried on the motor coach and truck operations of the D. & R. G. W. in southern Colorado. With the transfer of all operating certificates to one company, the administration of the highway services of the railway will be centralized and the operations simplified.

Minnesota Freight Trucking Plan Abandoned by the Northern Pacific

Withdraws proposal to establish co-ordinated l.c.l. freight service from concentration points following adverse decision

The Northern Pacific has abandoned temporarily its plan to establish through its highway subsidiary, the Northern Pacific Transport Company, a co-ordinated rail-motor truck service for l.c.l. freight on its lines in the State of Minnesota. This abandonment of the Minnesota plans follows a recent adverse decision of the Minnesota Railroad and Warehouse Commission regarding the proposed service; the railroad may, nevertheless, proceed to install the co-ordinated freight service in other states reached by its lines.

The adverse decision of the Minnesota commission, according to a recent dispatch from St. Paul to the United States Daily, denied the Northern Pacific Transport Company permission to operate motor trucks in co-ordinated rail and highway freight service from designated concentration points on the rail lines of the Northern Pacific in Minnesota. The order held that without affirmative proof that there is a public need for the service, which proof was not presented by the petitioning company, the commission does not feel authorized to grant a certificate of convenience and necessity.

The service proposed was similar to that in operation on several other railways; it would involve the receiving and

dispatching of freight cars, loaded with l.c.l. freight, at designated concentration points. From these latter motor trucks would deliver the freight to smaller surrounding stations. Under such a plan it was hoped to expedite the movement of l.c.l. freight and to effect economies in the operation of local freight trains on light traffic lines.

The transport company in its petition asking for a certificate of convenience and necessity stated that the company's attorneys were of the opinion that no certificate was required "because the proposed operation will not result in the applicant becoming a common carrier and that its operation will in fact be auxiliary to and supplement that now furnished by the parent company, Northern Pacific Railway Company."

The company stated that it did not waive any right it might have to question the jurisdiction of the commission or the right to perform the operation described without having first secured a certificate from the commission.

In answer to the question of jurisdiction, the commission issued an order February 10, 1930, holding that the proposed operation falls within the provisions of the act under which the commission controls motor carriers, and stating that the Northern Pacific Transport

Company has no right to engage in the transportation service in Minnesota without the approval and authority of the commission.

"Whether or not such approval and authority will be granted," the commission then said, "can only be determined by this commission after public hearing and a showing of public convenience and necessity as provided by the statute."

At a subsequent hearing upon the application, the commission's present order states, the applicant rested its case upon the testimony of but one witness, B. O. Johnson, assistant to the vice-president of the Northern Pacific Railway Company, whose testimony "was largely explanatory of the purpose of the proposed operation."

"The witness stated," the commission says, "that the rail carrier's only object in using trucks was to effect a speedy delivery of shipments and that while the use of trucks might eventually result in a reduction of operating expenses to the rail carrier by the discontinuance of freight trains, the principal purpose the rail carrier had in urging this application was a more prompt service. Shipments would be received by consignee from three to seven hours sooner if shipped by truck. There would be no saving to either shipper or receiver in the matter of rates."

"The statute," the order holds, "provides that operative rights shall be granted only upon a showing of public convenience and necessity. The commission is required to find from the evidence that public convenience and necessity require the service proposed."

"Outside of the applicant itself, no witnesses were produced to show that the service proposed is a public need. This commission cannot make a finding of public convenience and necessity, nor can it grant a certificate upon a mere showing by the Northern Pacific Railway Company that the service is desired by it."

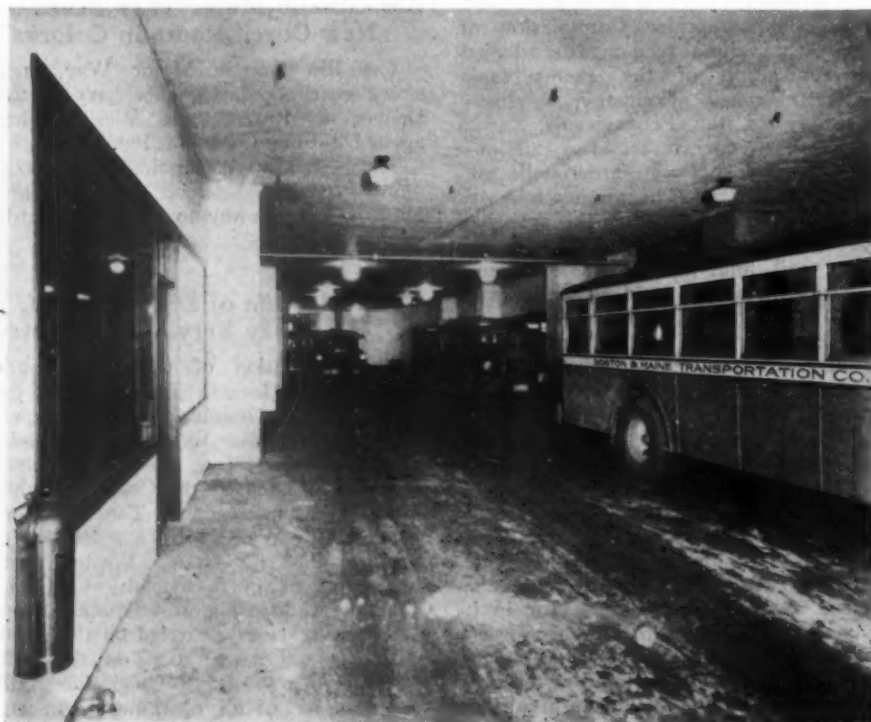
"Merchants and dealers in the various towns now served by the rail carrier and the public generally who may be expected to use the service have made no expression as to their needs or whether the proposed service would improve the present rail service."

"The affirmative showing in support of public convenience and necessity as required by the statute is entirely absent. Without affirmative proof that there is a public need for the service herein sought to be established, this commission does not feel authorized to grant the certificate applied for."

The commission also held to be well taken an objection to the application on the ground that a section of the statute forbids consideration within one year of such an application over a route which has been denied by the commission.

Section 17, Session Laws 1925, chapter 185, the commission says, provides that:

"Where a petition for a certificate of public convenience and necessity has been in whole or in part denied, a new application therefor shall not be again considered by the commission within one



Interior View of Park Square Terminal, Boston, Mass., with B. & M. Motor Coach in Right Foreground

year from the date of the order of the commission filed therein, unless it shall be made to appear to the commission that there has been a material change in the transportation needs of the communities proposed to be affected."

The commission on January 4, 1930, had denied the applications of other companies to operate freight truck service in the territory sought by the Northern Pacific Transport Company. The application of the latter was filed January 3, 1930, the commission says.

"The requirements of the statute that a material change in the transportation needs of the communities proposed to be affected has occurred since the denial of these applications by our said order is not alleged in the application," the commission says, "nor does the record show that any material change in the transportation needs exists. We can place no other construction upon the language of this section of the act."

New England Installs 14 Coaches in Boston-Providence Service

The New England Transportation Company, highway subsidiary of the New York, New Haven & Hartford, recently installed 14 motor coaches on the highway route between Boston, Mass., and Providence, R. I. Seven of the vehicles placed in service were new and seven were rebuilt coaches.

The announcement that this new equipment would be installed was made on April 18 by H. A. Moynihan, superintendent of the New Haven's Providence division who was recently placed in charge of the highway operations of the New England Transportation Company in the Providence-Boston territory. He stated that highway schedules would not be increased immediately since the new motor coaches will replace present equipment.

N. A. C. C. Truck Department Starts Educational Campaign

The Motor Truck Department of the National Automobile Chamber of Commerce has inaugurated a campaign designed to promote transportation by motor trucks in the United States. Major features of the campaign include the establishment of a speakers bureau; the creation of a field staff; the study of motor truck taxation and regulation, and the circulation of more publicity about the desirability to the public of motor truck service.

To carry out the details of this program the Motor Truck department recently announced several additions to its staff. H. R. Cobleigh, who has been a member of the chamber's staff for many years, is now in charge of that feature of the program involving a campaign for better truck driving and is director of the speakers bureau. Two field representatives will devote their time exclusively to truck matters; these are Morris G. Young, and James V. Yarnall, while research and publicity will be handled by Stephen D. Bryce, Jr. Finally, a legal



Driveways of the B. & O. Motor Coach Station, Forty-second Street, New York—Turntable in Foreground

department has been established, and LaRue Brown of Boston has been retained as counsel. Mr. Brown served the Chamber of Commerce during 1928-29, in connection with the pending proposals for Federal regulation of motor coaches. He will now undertake to provide advice on legal problems of the motor truck business to both operators and manufacturers and in addition will make a study of regulation of the motor truck business as it has developed in the various States and a survey of the decisions by state and federal courts, interpreting these regulatory laws.

Long Island Allowed to Abandon Whitestone Branch

Following hearings before the Interstate Commerce Commission, the Long Island has been granted permission to abandon that portion of its Whitestone branch extending from the west bank of the Flushing river to the terminus of the branch at Whitestone Landing, N. Y., approximately 4.1 miles, upon condition that adequate coach and truck service be established to provide necessary transportation facilities.

The petition for the abandonment of the branch was presented by the railroad because of the necessity of eliminating a number of grade crossings at various points on the line. Inasmuch as the branch serves a relatively small population with almost no freight traffic, and has been operated at a loss for the past two years, the Interstate Commerce Commission decided that "the expenditure of approximately \$2,000,000 for the elimination of grade crossings, in addition to the operating losses sustained, plus the interest charges on the cost of elimination, would constitute a waste of money which

could not do otherwise than impose burdens upon commerce, both interstate and intrastate."

The order provides, however, that the railroad shall secure the permission of the state authorities to "establish adequate motor coach service at all stations now served on the Whitestone branch with the exception of Bridge street, and establish truck service for l.c.l. freight at College Point and Whitestone." This motor service is to be continued until such time as the area formerly served by the branch shall be served by other transportation facilities, a provision which was made with the idea that the rapid transit facilities of New York City may be extended to this district in the near future.

Income of Pickwick Stages Declined 26 Per Cent in 1929

The 1929 gross income of the Pickwick Stages System was \$106,638, or 26 per cent less than that of 1928, according to reports filed with the Railroad Commission of California. Operating revenue decreased \$442,108 in 1929, or from a 1928 figure of \$4,033,215 to \$3,591,107 last year. At the same time expense figure decreased from \$3,546,539 in 1928, to \$3,173,948 in 1929, a decline of \$372,591.

The increased taxes in 1929 approximately equaled the decrease in income since these levies rose from \$95,191 in 1928 to \$201,572 last year, or an increase of \$106,381. Operating income after payment of taxes was \$215,586 in 1929 as against \$391,484 in 1928, a decrease of \$175,898. Non-operating income offset this latter decline somewhat and thus produced the gross income figure of \$106,638.

Reading and Jersey Central Expanding

(Continued from page 1037)

Philadelphia route by adding 10 p. m. and 12 p. m. schedules from both termini on Saturday and Sunday nights. Service on the Harrisburg-New York route will also be increased from the present two round trips a day to three round trips a day.

At points where regular motor coach stops are made at other than railway stations, the Reading Transportation Company has adopted the policy of arranging for ticket sale on a commission basis by hotels, stores, or other responsible parties who will provide station shelter for patrons. This policy will enable the company to avoid delays attendant upon change-making by the motor coach drivers.

To provide for the increased schedules on the Harrisburg-New York and Philadelphia-New York routes, the two participating transportation companies have each purchased five Mack club parlor coaches which were delivered this month. These coaches follow the general style and color scheme standard on the Reading Transportation Company, the only essential difference being that the band rail carries the name of both the Jersey Central and Reading Transportation companies instead of that of the Reading Transportation Company only. Equipment for the Philadelphia-New York line is provided by the two transportation companies in the ratio of one-third by the Jersey Central and two-thirds by the Reading Company, the route mileage being provided on about the same proportion.

As a further extension of its activities in highway transportation, the Reading Transportation Company this week inaugurated motor truck service between Reading, Pa., and Bridgeport, 40 miles. This service will be conducted for the benefit of the parent railroad, permitting it to dispense with a local train. The trucks will handle l.c.l. freight between railroad stations only, no direct collection and delivery being offered. Two General Motors trucks have been purchased as the initial equipment for this route. The plan is to operate one truck out of each terminus each morning serving all stations enroute. It is planned to have the truck crews change trucks when they meet during the middle of the day so that the men may be at home over night.

Express Agency Denied Ohio Trucking Permit

(Continued from page 1038)

lieve that the applicant, wishes to contend that, if the commission should find that the applicant was functioning as a motor transportation company, this commission would be without authority to interfere with such operation for the reasons set forth in the applicant's brief.

For the sake of argument, we will con-

Much Perishable Freight Moving by Motor Truck

The National Automobile Chamber of Commerce in a recent statement quoted statistics from United States Department of Agriculture reports to show the extent which fruits and vegetables are moving by motor truck. The figure revealed that motor trucks are moving 65 per cent of the fruit traffic in southern Indiana, 23 per cent in southern Illinois, 53 per cent in Virginia, and 16 per cent in Delaware and Maryland.

Among the advantages cited in the statement in favor of using motor trucks for this movement are: Ease of rapid handling directly from farm to consumer market; elimination of refrigeration necessity en route; higher net returns to producers and lower final market prices; package savings and the advantage of marketing l.c.l. shipments.

clude that this contention would be well taken if the operations were continued on the private right-of-way of the operating company, as heretofore conducted. However, if it is desired to divert the traffic to the public highways of the State of Ohio, we have the authority and duty to impose the same rules that any corporation would be subject to, to show a public convenience and necessity as well as a compliance with all of the other statutory obligations imposed upon common carriers using the public highways as their field of operation.

The applicant, while designated by the statute as a railroad company is, as a matter of fact, the licensee of the equipment of the various railroad companies with which it has entered into a contract to transport its express packages.

The fact that the railroads that have heretofore transported its packages have withdrawn the service, for the reason that the income they were receiving over these particular lines does not justify the expense of operation, simply leaves the express company in the position of being deprived of its former transportation facilities.

Other facilities are at hand through the means of the certificated truckers, who are protestants herein, who operate a service much more satisfactory in speed and frequency of operation than existed when the express company relied upon the now abandoned railroad service.

If the contention of the express company is correct, that it now has the right to establish its own means of transportation, by truck, the consequence would be that wherever an existing means of transportation, utilized by the express company, is abandoned, the express company would have a right to establish its own trucks in order to continue a service which might well be se-

cured by patronizing an established and properly certificated means of transportation.

Such a general rule might well lead to extensive operations by the express company, over highways already bearing the burden of sufficient transportation facilities to carry all the goods offered by the express company.

The company urges that it only intends to transport its own packages, which are largely interstate shipment. Being a common carrier and being certificated as such, it would be obliged to transport all goods offered to it whether it be the goods in process of transportation as express packages or the goods of any other shipper who might desire to avail itself of the trucks operated by the express company. 10 C. J., page 77, section 79.

As a common carrier, it would not have the right to reject goods offered by any shipper and confine itself exclusively to the handling of its own packages. It would thus become an active competitor of the already existing truck operators.

The statement is made that if not permitted to operate its own trucks, it must abandon the express service in the territory. This is not true so long as there are other methods of transportation sufficient to carry the express packages and the express company, being a railroad, will not be permitted to abandon its service without first applying to the commission and giving some reason why it should retire from this service in which it has been so long engaged.

The mere fact that its former means of transportation has failed it, is not a sufficient reason for its abandoning the service where other adequate means exist.

Since the hearing of this cause before the attorney examiner, the Supreme Court of the State of Ohio, in the case of the Ohio Association of Commercial Haulers v. New York Central Railroad Company, decided practically every question involved in this proceeding, against the contention of the applicant, Railway Express Agency, Inc. In fact the issues are quite similar with the case before us.

In that case the court distinctly held that the railroad company became a motor transportation company when using the highways as a common carrier even though a large portion of the goods hauled were for interstate commerce.

In the case of the New York Central Railroad Company v. Public Utilities Commission of Ohio, decided Feb. 6, 1930, O. S. Vol. 121, page 383, being the case above referred to as the Ohio Association of Commercial Haulers v. The York Central Railroad, it was held that:

"Where a common carrier railroad company owns, controls, operates or manages any motor propelled vehicle not usually operated on or over rails, used in the business of transportation of persons or property or both as a common carrier for hire over any public highway in this State, this constitutes such railroad company a motor transportation company.

"Whether or not such railroad company is en-

gaged as a motor transportation company or a private contract carrier is a question of fact. "An order requiring such carrier to cease and desist from maintaining and operating, or attempting to maintain and operate, such motor transportation company service, without first obtaining from the public utilities commission a certificate declaring that public convenience and necessity require such operation, is not void as to intrastate traffic because of the fact that part of the traffic thus maintained and operated is an interstate traffic."

The commission does not find it necessary to pass upon the third and fourth reasons given by the examiner in his recommendation that the application be denied.

The commission does not feel called upon to say that the recent operation of trucks by the applicant renders it an unfit party to be granted a certificate. The operation was not in defiance of any order of the commission, but through a misunderstanding of the rights of the applicant.

Under the evidence in this case the commission finds that the attorney examiner was justified in his findings and conclusion for the first, second and fifth reasons set out in his recommendation. The order of the commission will be that the applicant cease its present operation and that its application for a certificate be denied.

We find that the applicant is now and would be engaged as a motor transportation company, by reason of the service it now furnishes and which it proposes to furnish.

If the applicant desires a certificate with proper restrictions over that portion of the route applied for, not now being operated by either of the protestants, to wit: between Minerva and the intersection of State route Nos. 80 and 43 and that portion between Carrollton and Dellroy over State route No. 39, such a certificate may issue.

Georgia Court Upholds State Regulation Law

(Continued from page 1039)

schedules, on the ground that the act of Aug. 29, 1929, is in conflict with provisions of the Constitution of the United States. * * * *

We think the evidence, while meagre on the point, shows the business to be the common carriage of passengers. The powers granted in the charter look to that sort of business. The contracts made for stations and station agents point the same way. The contending for more and better schedules, and the reference to other bus lines as competitors, tend to show that the complainant was running such passenger buses as are familiar now on all the roads. These cannot, of course, carry everybody, but they will carry anybody whom they can accommodate and who has the price.

Though unaided by eminent domain, and though more limited than the railroads in many respects, this business is affected with a public interest and subject to public regulation. *Terminal Taxi Co. v. District of Columbia*, 241

U. S. 252. In Georgia the highways, built and maintained by the public property, and (subject to such interest as the United States may have in them as post roads) are subject to State control. The use of streets and highways is not absolute and uncontrolled. Such use is subject to reasonable regulation by the public. * * * From the premise that the streets belong to the public, the conclusion is drawn that individuals have the right to use the streets for the purpose of transporting passengers for hire. This conclusion does not properly follow from the premise.

* * * The ordinary use of the streets, as we have seen, is for travel, and not to this may be added transportation of goods by their owners to and from their residences or places of business. Transportation of travelers or goods for hire does not fall within the ordinary use of the streets. Their use for purposes of gain is special and extraordinary, and may be prohibited or conditioned as the legislature or municipality sees proper. The conduct of the business of a carrier for hire over the streets of a city is a mere privilege, and not a natural or inherent right of the individual conducting such business. Being a privilege, it can be given or withheld. *Slessinger v. City of Atlanta*. 161. * * *

The requirement of a certificate of public necessity and convenience is justifiable. Carriers for hire, such as the complainant, whether in all respects common carriers or not, may be put in a legislative class for regulation. It is common knowledge that the expensively improved modern highways, affording a perfect track, untaxed, built and kept up by the public, have been

made the theatre of a passenger and freight carriage business that has greatly modified the traffic system of the country, and has brought about larger, heavier and swifter vehicles that tend greatly to damage the pavements, and on narrow ones becomes a source of great inconvenience and danger.

Profits depend on filling the vehicles, and there is constant temptation to make quick schedules and reach stations ahead of competitors. Regulation and restriction is imperative. The legislature, through its agency, the public service commission, may determine what sort and how many such vehicles can be used on the roads with safety to the pavement, to their passengers, and to other travelers, and may prefer the ordinary use of the highway to the new use of it for extensive carriage business. It may limit the use of its highways for this purpose just as it has always limited the use of its power of eminent domain, so as to avoid needless and perhaps disastrous multiplication of railroads.

The power to select, limit and prohibit uses of the highways by carriers for hire, which is implied in the requirement of a certificate of public convenience and necessity, is justified both as a regulation of the business and as a regulation for the protection and safety of the highways. * * * *

This brings us to the regulation by restriction of the schedules. Such a regulation appears to have a double source, partly for the convenience of the public in having certain and regularly spaced schedules and partly in the interest of safety on the road in not having too many or too speedy ones. No serious question of the power to regulate in these respects seems possible, unless the regulation be arbitrarily done. Complainant here asserts improper and discriminatory regulation by the commission, but it was done after hearing and the record of the evidence produced is not presented to us.

The commission asserts that the road is the only paved one from Atlanta to Macon, that it is narrow and the most heavily traveled road in Georgia, and that there are 19 round trip motor buses now using it daily. Evidently this is more than the traffic demands, as the complainant cannot profitably fill its vehicles. The hours assigned complainant do not seem disadvantageous on their face and no proof is offered that they are so in fact. The greater number of schedules given competing lines is explained by saying that the number of local schedules given each is equal, the excess schedules being interstate through schedules. It is not apparent that arbitrary discrimination has been practiced against complainant.

From what has been said it follows that the certificate of public necessity and convenience can be revoked if the complainant fails to observe lawful regulations, or if circumstances arise rendering it detrimental to the public to continue it. The statute permits such revocation only after hearing. Such a hearing is now imminent before the commission. There is no reason to doubt

Boston & Maine Provides Rail-Motor Coach Service

The Boston & Maine on April 2 inaugurated a combination rail and motor coach service to accommodate New England school children desiring to visit Concord, Lexington, Bunker Hill and other points of historic interest in greater Boston. The service, which will be available during April and May at half fare railroad rates for groups of 20 or more pupils, provides a co-ordinated train and motor coach trip, with a five-hour tour of Boston, Arlington, Cambridge, Lexington and Concord.

The new service is available to pupils from Salem to Portland, Me., on the Boston & Maine eastern route between Boston and Portland; and from Andover to Portland, Me., on the western route; from Lowell to Plymouth, N. H., and White River Jct., Vt. on the southern division; from Ayer to Bellow Falls, Vt., and to Hoosick Falls, N. Y., on the Fitchburg division; and from Oakdale to Northampton on the Connecticut River division.

that it will be fairly conducted and result in a just order. No constitutional right of the complainant is to be denied to prevent which this court should act. * * *

Orders for Equipment

Pennsylvania Affiliate Places Large Motor Coach Order

The People's Rapid Transit Company, a motor coach line operating out of Philadelphia in which the Pennsylvania has a substantial interest, recently placed an order with the General Motors Company for 20 new motor coaches. Ten of these are of mechanical drive, while ten are gas-electrically operated. It is planned to place the new vehicles in service on the New York-Philadelphia-Washington route. They have a 250-in. wheel base and 33-passenger capacity.

THE UNION PACIFIC STAGES has accepted delivery of two Mack Model BK motor coach chassis.

THE PENNSYLVANIA has accepted delivery of three Mack Model BK 33-passenger motor coaches.

THE CENTRAL OF GEORGIA has accepted delivery of one Mack Model AB 17-passenger combination passenger and express motor coach.

THE BURLINGTON TRANSPORTATION COMPANY has received a Type W observation coach from the General Motors Truck Company.

THE GREYHOUND MANAGEMENT COMPANY has accepted delivery of five Type W observation motor coaches from the General Motors Truck Company.

THE JERSEY CENTRAL TRANSPORTATION COMPANY has received delivery of five Mack club parlor coaches which will be used in the service operated on behalf of this company by the Reading Transportation Company.

THE READING TRANSPORTATION COMPANY has received delivery of five Mack club parlor coaches which it will use in the service which it conducts jointly for itself and the Jersey Central Transportation Company.

THE READING TRANSPORTATION COMPANY has received delivery of two General Motors trucks with specially designed bodies for use in freight transportation service between Reading, Pa., and Bridgeport.

Motor Transport Officers

E. S. Haverly, superintendent of the Interstate Transit Lines, subsidiary of the Union Pacific, with headquarters at Denver, Colo., has been promoted to traffic manager, with headquarters at Omaha, Neb., to succeed L. G. Markel, who has resigned. H. D. Clark, superintendent of the Interstate Transit Lines, with headquarters at Hastings,

Neb., has been transferred to Denver, to succeed Mr. Haverly.

Earl F. Parks has been appointed superintendent of operation of the Southern Pacific Motor Transport Company and the Union Auto Transportation Company, with headquarters at El Paso, Tex., succeeding R. R. Wilson, transferred. Mr. Parks will have jurisdiction over the territory from El Paso to but not including Safford, and Douglas, Ariz.

Robert C. Hunton has been appointed superintendent of operation of the Union Auto Transportation Company, with headquarters at Phoenix, Ariz., succeeding Earl F. Parks, transferred. Mr. Hunton will have jurisdiction over the territory from El Centro, terminal excluded, to and including Safford and Douglas, Ariz.

J. W. Krug has been appointed superintendent of operation of the Peninsula Rapid Transit Company and the Pacific Auto Stages, with headquarters at San Francisco, Cal., succeeding F. D. Everman, transferred. He will have supervision of the San Francisco terminal and the company's lines in that territory radiating from San Francisco to San Luis Obispo; San Jose to but not including Livermore and Gilroy to but not including Los Banos.

F. D. Everman has been appointed superintendent of operation of the Southern Pacific Motor Transport Company, California Transit Company and Pickwick Stages System, with headquarters at Oakland, Cal., replacing B. Evans, resigned. He will have jurisdiction over the Oakland terminal and his territory will radiate from San Francisco (terminal excluded) to but not including Medford, Ore., via Pacific highway, and Sacramento, Cal.; Oakland to Martinez; Vallejo to Lakeport and Lucerne, via Calistoga Vallejo to but not including Santa Rosa and San Rafael (terminal excluded) to Sonoma.

Walter Maxwell has been appointed superintendent of operation of the Pickwick Stages System, with headquarters at Eureka, Cal., and will have supervision of the Company's lines in that territory from San Francisco (terminal excluded) to but not including Grants Pass, Ore., via Redwood Highway; Santa Rosa to but not including Calistoga, via Petrified Forest, and Santa Rosa to Monte Rio.

R. R. Wilson has been appointed superintendent of operation of the Southern Pacific Motor Transport Company, California Transit Company, and Pickwick Stages System, with headquarters at Sacramento, Cal., and will have jurisdiction over the Sacramento terminal and the territory radiating from Sacramento to Salt Lake, Modesto and Davies Junction (local service); San Francisco and Oakland (terminals excluded) to but not including Fresno, via Modesto and Los Banos; Stockton to but not including Oakland and San Francisco, and Stockton to but not including Martinez.

A. M. White has been appointed to succeed P. E. Beutke, resigned, as district manager of Pickwick and affiliated motor coach lines at Phoenix, Ariz., with supervision of the company's lines in the territory from Yuma, Ariz. to El Paso, Tex., inclusive. Mr. White has been connected with the Pickwick and Motor Transit companies for more than eight years, commencing as manager of Union Stage Depot in August, 1921. Since that time he has held a number of executive positions and until his recent advancement has assisted J. H. Hodge, assistant general manager at Los Angeles, Cal.

A. B. Freyschlag has been appointed general superintendent of the Southern Pacific Motor Transport Company, California Parlor Car Tours Company, Peninsula Rapid Transit Co., California Transit Company, Pickwick Stages System, and Pacific Auto Stages, with headquarters at San Francisco, Cal., and will have jurisdiction over the territory from Medford, Ore., to and including San Luis Obispo, via Redwood and Pacific highways, San Francisco to but not including Fresno, Cal., and San Francisco to Salt Lake City, Utah.

F. E. Burdett, superintendent of operation of the Southern Pacific Motor Transport Company, California Parlor Car Tours Company, California Transit Company, and Pickwick Stages System, with headquarters at Los Angeles, Cal., will, effective April 1, have his territory radiate from Los Angeles to Fresno, B. shop, El Centro and San Diego, and from Los Angeles to but not including San Luis Obispo, Cal.

Among the Manufacturers

Thomas M. House has been appointed western manager of the Federal Motor Truck Company, with headquarters at Portland, Ore.

Louis J. Kanitz, who for the past three years has been in charge of the industrial engine division of the Continental Motors Corporation, Detroit, Mich., has been promoted to general sales manager.

Frederick A. Hastings has been appointed to the staff of the Legislative Department of the National Automobile Chamber of Commerce. Mr. Hastings will specialize in the study of motor legislation and will be a consultant in field activities of the chamber.

E. F. Sayers has been appointed assistant sales manager of the Autocar Company, in charge of branch operations. By this appointment, Mr. Sayers, who has for some time been a member of the general factory sales department, assumes directional supervision of the entire Autocar system of direct factory branches, numbering more than 50. He was formerly branch supervisor of the Federal Motor Truck Company at Detroit, Mich., and prior to that was for ten years assistant to the president of the Garford Motor Truck Company at Lima, O.